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Who put the "NO" in Innovation? Innovation resistance leaders' behaviors and self-identities

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ABSTRACT

Individuals can exert strong influence on the fate of innovations. However, we know little about the most conspicuous market actors who resist innovations: innovation resistance leaders. We define innovation resistance leaders as figureheads in media and as active opponents who act against an innovation to exert influence at the societal level. To understand their role, we seek to answer the following questions: How do innovation resistance leaders engage in resistance, and who are these leaders? Our exploratory qualitative analysis of eight resistance cases reveals the following two behaviorally distinct resistance leader types. *Initiators* are among the first people to notice a problem after an innovation launch, and they scale up a resistance movement through the media (i.e., they organize a resistance initiation process), whereas *Aggregators* join an existing movement after a critical mass of negative voices has been reached (i.e., they organize a resistance aggregation process). Regarding resistance leaders' self-identities, Initiators tend to have a missionary social identity while Aggregators tend to have a consumerist one. We contribute to innovation resistance and adoption as well as innovation diffusion literature by conceptualizing a new type of resister who, based on their self-identity, performs two distinct and newly identified resistance diffusion processes.

1. Introduction

We see resistance movements every day on TV, in social media and on the streets. When these movements target innovations, companies often face serious challenges. Understanding how innovation resistance movements form and spread seems to be essential for companies avoiding or reacting to large-scale resistance. Academic literature provides insights into why innovations and new technologies diffuse or do not diffuse (e.g., Compagni et al., 2015), which is especially important when innovations have the potential for positive societal impact (Ahlstrom, 2010; Garud et al., 2013). In that regard, innovation literature highlights that certain individuals can exert an extraordinary influence on the fate of new technologies and innovations (Moldovan and Goldenberg, 2004). While the literature emphasizes the role of innovation-promoting individuals (Bilgram et al., 2008; Iyengar et al., 2011; Van Eck, Jager, and Leeflang, 2011), research on innovation-opposing individuals outside organizations is sparse (Cavusoglu et al., 2010). However, the following three cases illustrate the relevance of innovation-opposing individuals for innovation diffusion.[1]

In 2016, the biotechnology company Oxitec planned to release a trial of genetically modified mosquitos in Key Haven, Florida to fight the mosquito-transmitted Zika virus. Although Oxitec received approval from the US Food and Drug Administration (FDA), Mila de Mier initiated an online petition that criticized Oxitec for opening a Pandora's Box of unknown impacts and ignoring the freedom of choice. Oxitec

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[1] When we use terms such as "inhibiting" or "negative influence," we use a purely descriptive perspective to describe an influence on innovation diffusion. We do not intend to make any normative claims. Thus, we do not make any claims regarding whether an innovation is "good" or "bad" and whether resistance is morally justified or not. We refer to innovations as new products and technologies embedded in consumer contexts.

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abandoned its plan for the trial in Key Haven and decided to search for another location with community support (The Guardian, 2016).

In 2013, Tami Canal initiated the "March Against Monsanto," which is a grassroots movement against Monsanto, a large producer of genetically modified food (GMO). Her call to protest against Monsanto's GMO products that she claimed were "poisoning our children, poisoning our planet" had enormous impact: The march extended to hundreds of different cities in several countries, and media outlets covered the protest marches worldwide (The Guardian, 2013).

In 2012, Adidas announced a new pair of sneakers, the JS Roundhouse Mids. Although the new sneakers with innovative ankle shackles were intended for stylish consumers, people started noting that the sneakers invoked similarities to slave shoes. American civil rights activist Jesse Jackson entered the debate, called the shoes offensive and insensitive, and threatened Adidas with a boycott if the "shackle shoe human degradation" was launched. Adidas reacted within hours to his statement and withdrew its plans to sell the shoes (The New York Times, 2012).

As these examples demonstrate, innovation-opposing individuals are crucial for innovation diffusion as follows: These individuals can delay diffusion (such as in the case of Mila de Mier), foster a negative reputation (such as in the case of Tami Canal) or even stop the entire diffusion process (such as in the case of Jesse Jackson). Because individuals such as Mila de Mier, Tami Canal and Jesse Jackson demonstrate resistance against innovations that reaches a wider part of society and represent figureheads in media, we refer to these individuals as *innovation resistance leaders*. Although innovation resistance leaders are conspicuous, our theoretical knowledge of this phenomenon is limited.

Consequently, this study investigates the following research questions: (1) How do resistance leaders spread resistance (i.e., in terms of their behaviors)? and (2) Who are innovation resistance leaders (i.e., in terms of their self-identities)? To address these questions, we assume the lens of self-identity theory, which suggests that different self-identities relate to different behaviors of individuals (Fauchart and Gruber, 2011; Powell and Baker, 2014; Wry and York, 2017). With the help of a qualitative grounded theory procedure, we analyze eight cases of new products and technologies that encountered resistance and study the dominant innovation resistance leader in each case.

Specifically, our findings reveal the following two types of innovation resistance leaders: Initiators and Aggregators. Initiators are among the first to notice a problem after an innovation launch and subsequently scale up a resistance movement (i.e., an initiation process similar to that in the examples of Mila de Mier and Tami Canal). The initiation process starts because the Initiator seeks to advance a societal mission (i.e., missionary social identity), and the perceived innovation problem conflicts with his or her mission. In contrast, Aggregators tend to seek to help and support groups of consumers (i.e., consumerist social identity). Here, the affected consumers are the first to notice a problem after an innovation launch, and then, the Aggregator joins the movement after a critical mass of negative voices is reached and amplifies the people's opinions (i.e., an aggregation process similar to that in the example of Jesse Jackson). With this research, we contribute to innovation resistance and adoption literature by conceptualizing and validating a new type of resister, shifting the thinking from self-oriented resisters to "social" resisters and applying self-identity theory to reveal underlying causes of stated resistance arguments. We further contribute to innovation diffusion literature by identifying two new resistance diffusion processes, connecting the individual level to macrolevel diffusion processes and enabling the prediction of resistance leaders *a priori*. Beyond innovation, our contribution helps to understand how Greta Thunberg (climate activist and "Initiator" of *Fridays for Future*) and Alyssa Milano (actress and "Aggregator" of personal sexual harassment fates with the hashtag *#MeToo*) might differ in their motives and behaviors as resistance leaders.

2. Theory

In the following sections, we review the literature on innovation diffusion, innovation adoption, and innovation resistance, which takes both a macrolevel (e.g., investigating the patterns of how innovations spread) and a microlevel (e.g., examining individual drivers of and barriers to innovation purchase and use) perspective.[2] Because this literature falls short of understanding resistance leaders, we use the lens of self-identity theory to create a basis for our qualitative study.

2.1. Resisting individuals in innovation management research

Innovation diffusion is a social process in which information spreads either virally from one individual to another or more broadly through mass media (Goel et al., 2015). Specific individuals can play a key role in other people's behaviors in such innovation diffusion processes. The innovation resistance literature acknowledges the relevance of different types of individuals—including "laggards," "passive resisters," "antagonists," "active resisters," "postponers," "rejecters" and "opponents" (e.g., Kleijnen et al., 2009; Rogers, 2003; Talke and Heidenreich, 2014)—but no systematic inquiry has been made into the resister types based on the extent of their influence. As a consequence, extreme forms of resistance behavior (i.e., innovation resistance leaders who reach out to the wider society beyond their direct personal network ties) have received very limited research attention. Such forms of behavior might appear less frequently but have a wider influence. The lack of research creates a challenge for innovation research because "the evidence from research and societal movements collectively suggests the importance of negative influentials, which is different from nonadopters or those who lack knowledge about a product" (Nejad et al., 2014: 192).

To address this gap and foster a more structured investigation of resisting individuals in innovation research, we conceptualize resisting individuals based on the outreach to other individuals (see Fig. 1). On a continuum, we differentiate between individuals who have no outreach beyond their own behaviors (i.e., nonadopters), individuals who influence their immediate social ties (i.e., negative opinion leaders) and individuals who reach out to the wider society (i.e., resistance leaders). Thus, the term "leader" reflects the extent of outreach and not necessarily the active and direct management of a group of people.

Nonadopters. First, nonadopters are individuals who refrain from adopting an innovation without exerting a direct influence on other individuals. Nonadopters include laggards (Goldenberg and Oreg, 2007) and passive resisters (Heidenreich and Handrich, 2015). Laggards are the last people to adopt an innovation; they are described as being reluctant to change, having a low socioeconomic status and being older on average (Rogers, 2003). Passive resisters do not adopt an innovation due to cognitive traits such as routine-seeking or cognitive rigidity or because of situational aspects such as status quo satisfaction (Heidenreich and Kraemer, 2015; Heidenreich and Spieth, 2013) or practical concerns (Kleijnen et al., 2009). Regardless of whether studies use the concepts of nonadopters, laggards or passive resisters, the implicit assumption is that these individuals refrain from adoption but do not explicitly exert significant influence on others.

Negative opinion leaders. Second, negative opinion leaders are individuals who spread resistance to their direct social ties. In addition to

[2] We review the literature on negative influentials on innovation adoption mainly in the consumption context and not in organizational settings. While "innovation opponents" and "resistance to change" are prominent terms in organizational research (e.g., Goepel, Hölzle, & zu Knyphausen-Aufseß, 2012; Oreg, 2003; Van Offenbeek, Boonstra, & Seo, 2012), innovation adoption in these studies refers to the organizational setting and not to wider society. Hence, these studies can provide only limited information regarding innovation resistance leaders.

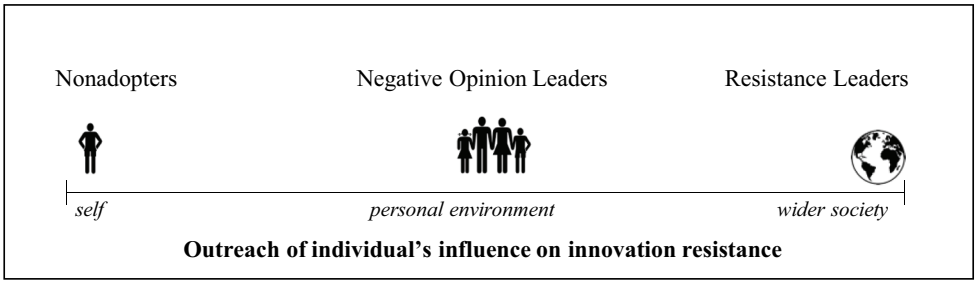

Fig. 1. Conceptualization of Resisting Individuals Based on their Outreach.

the positive role typically played by opinion leaders in innovation diffusion, such research has also recognized that opposing opinion leaders can significantly delay or even inhibit innovation diffusion (Cavusoglu et al., 2010; Moldovan and Goldenberg, 2004). For example, existing research found that ambivalent and hostile opinion leaders can threaten project success (Locock et al., 2001) or that negative opinion leaders shape the opinions of others (Leonard-Barton, 1985). Opinion leaders are characterized as influential because of their persuasive skills, expert knowledge, large number of social ties and role as brokers who link otherwise socially or geographically disconnected groups of people (e.g., Goldenberg et al., 2009; Van Eck et al., 2011). Thus, opinion leaders can be important hubs in viral diffusion mechanisms (Goldenberg et al., 2009).

In contrast to the diffusion of innovation-promoting information, negative information can be particularly detrimental to innovation because it can be perceived as more diagnostic than positive information; therefore, it can be weighted more heavily in decisions (Moldovan and Goldenberg, 2004). In addition, the influence of opinion leaders is typically bound by their social ties to their immediate environment. Opinion leader studies examine the influence on close others, such as friends and colleagues, or within a community (Locock et al., 2001). Accordingly, these studies identify opinion leaders with questions, such as "How many friends did you tell about […]?" (Van Eck et al., 2011) and "Compared to your circle of colleagues, how likely are you to be asked about […]?" (Iyengar et al., 2011). Hence, existing research conceptualizes opinion leaders mainly as innovation-promoting and limited in outreach to direct social ties.

Innovation resistance leaders. Third, innovation resistance leaders are *active opponents who act against an innovation to exert influence at the societal level beyond their personal environment*. These individuals speak not only to their immediate environment but also to a wider audience via broadcast mechanisms. For this reason, they represent *figureheads of resistance in the media*. However, despite their obvious relevance to the success of innovation diffusion, the existing literature offers limited insight into innovation resistance leaders, as Cavusoglu et al. (2010) state: "However, all existing diffusion models ignore the existence of opponents, who may impose a strong negative influence on potential adopters. […] Going beyond the passive reluctance to use the technology, these critics often show overt opposition to the technology and aim to influence the innovation's diffusion process" (Cavusoglu et al., 2010: 310). Innovation diffusion studies sometimes include negative influentials in their models (Cavusoglu et al., 2010; Goldenberg et al., 2007; Moldovan and Goldenberg, 2004). However, the actual nature of resisting individuals is simplified and not empirically investigated. Hence, these models do not consider the heterogeneity and dynamics of negative influentials. Therefore, they can primarily shed light on a limited set of theoretical issues (Kiesling et al., 2012).

Beyond innovation research, social movement literature investigates the motives and frames of movement activists. Participants in movements are described as positive change agents who stand up for oppressed others (Kozinets and Handelman, 2004) and seek to warn others about dissatisfactory experiences (Chelminski and Coulter, 2011). Activists perceive injustice and betrayal, and they stereotype an evil antagonist, often a firm, and mobilize a collective (Ward and Ostrom, 2006). However, the social movement literature rarely emphasizes individuals, particularly those who are the most influential, and focuses more on collective actions and resource mobilization (e.g., Den Hond and De Bakker, 2007). This research informs us that influentials likely possess specific motives and use tactics to exert influence, but how such individual aspects and resistance processes are related remains unclear. The lens of self-identity theory can help to understand the link between the self and behaviors, thus guiding our research question of who resistance leaders are and how they organize resistance.

2.2. Self-identity theory

Self-identity—the question of "Who am I?"—plays a key role in understanding behavior. *Self-identity theory* states that "people construct themselves as having some set of essential characteristics that they cite as defining their self-concepts and that they engage in interpretations and practices to affirm continuity of those self-concepts over time and place" (Gioia, 1998: 19). Resistance leaders, similar to all other individuals, strive to achieve congruence between their self-identity and their behavior. Identities are motivational and lead individuals to act in accordance with their identities because identity-congruent actions elicit positive reactions from other people and verify self-conceptions (Stryker and Burke, 2000; York et al., 2016). Thus, different self-identities lead to different behaviors, and understanding the self-identities of resistance leaders has the potential to explain why and how they engage in resistance at the societal level. Research in areas related to innovation has already demonstrated the relevance of self-identity to behavioral outcomes. For example, entrepreneurship research has found that different founder social identities explain different strategic choices in firm creation processes (Fauchart and Gruber, 2011) and that academic role identities entail work-related behavioral and output differences (Jain et al., 2009). Consequently, self-identity likely is an important component for understanding innovation resistance behavior—especially if the individual is central to the resistance. Self-identity theory primarily draws from two different literature streams: social identity and role identity.

Social identity. Social identity refers to "those aspects of an individual's self-image that derive from the social categories to which he perceives himself as belonging" (Tajfel and Turner, 1979: 40). Individuals similar to the self are categorized as belonging to the in-group, and individuals who differ from the self are categorized as belonging to the out-group (Stets and Burke, 2000). Social identity comprises the following three dimensions: (1) basic social motivation, i.e., the general goal of one's actions (e.g., self-interests, other people's benefit, and collective welfare); (2) frame of reference, i.e., with whom a comparison is made; and (3) basis for self-evaluation, i.e., how the self is evaluated (Brewer and Gardner, 1996; Fauchart and Gruber, 2011). Along these three dimensions, previous research has identified three central social identities that differ in inclusiveness. The personal self-

concept focuses on self-interests, the relational self-concept focuses on benefits for personal others, and the collective self-concept focuses on collective welfare for impersonal others (Brewer and Gardner, 1996; Fauchart and Gruber, 2011). Resistance leaders could also possess specific social identities that differ in inclusiveness, resulting in different behaviors like measures or positions taken.

Role identity. In contrast, role identity refers to "parts of a self composed of the meanings that persons attach to the multiple roles they typically play" (Stryker and Burke, 2000: 284). Individuals hold positions (i.e., roles) that carry specific behavioral standards and expectations. Hence, both social identity and role identity emerge from self-categorization, but the basis of self-categorization differs (i.e., category/group vs. role) (Stets and Burke, 2000). For example, entrepreneurs can have an inventor, a founder or a developer role identity (Cardon et al., 2009). Resistance leaders can also assume a specific role (e.g., change agent) and act according to their role identities. This research follows recent literature that assumes a combined self-identity perspective including both social and role identities (Gruber and MacMillan, 2017; Pan et al., 2019; Powell and Baker, 2014). This study seeks to examine which self-identity resistance leaders possess and how the identity relates to resistance behaviors.

3. Method

In this research, we capture a given situation in which an innovation has encountered resistance (i.e., a resistance case), and we analyze the type of resistance leader present in these externally given circumstances, including his or her behaviors and self-identities. We seek to describe emerging relationships between self-identities and behaviors while acknowledging that the exploratory character of this research cannot fully account for all external factors. When knowledge about a phenomenon is limited and the context is complex, an inductive approach that relies on case studies and grounded theory is adequate for building a new theory (Eisenhardt, 1989; Eisenhardt and Graebner, 2007). Case study research empirically investigates a contemporary phenomenon in-depth and within its real-life context (Yin, 2009).

3.1. Case selection

Starting in 2013, we gathered several controversial innovations through a review of online news articles, because cases discussed in the news media provide us with a rich and accessible information basis. News articles referred, for example, to protests against innovations or critical discussions of innovations. We made no a priori assumptions about the nature of resistance leaders' self-identities (e.g., different social identities such as personal, relational or collective self-concepts) because we do not have sufficient evidence for such assumptions. Rather, we followed an open, exploratory and iterative approach, which is typical for grounded theory research (Suddaby, 2006). However, in our case selection, we tried to capture potentially different social and role identities because variation in self-identities might explain different behaviors. For this purpose, and concerning *social identities*, we tried to capture different basic social motivations and frames of reference. A proxy for different basic motivations is the diversity of consumer concerns regarding an innovation. If consumer concerns vary among innovation cases, basic social motivations of resistance leaders might also vary. A proxy for different frames of reference is different innovation types. For example, technologies are located on a more abstract level as they are more broadly applied and less visible (e.g., frame of reference is the societal level), whereas branded products are located on a more tangible level directly visible to consumers (e.g., frame of reference is the consumer level). Concerning *role identities*, we also did not focus on specific role identities but tried to allow for potentially different roles. As a proxy for different roles, our resistance leaders also have different job positions in different contexts.

As a general rule, scholars recommend using a minimum of four and a maximum of ten cases (Eisenhardt, 1989). We selected eight cases to achieve a sufficient level of external validity by considering different local settings (i.e., North America and Germany). Germany, the North American countries USA and Canada are among the 15 most innovative countries according to the Global Innovation Index (Dutta and Lanvin, 2013). Moreover, indicators of consumer innovativeness such as the innate willingness to pay for innovations are similar between both local settings (Frank et al., 2015). Hence, innovativeness scores in these contexts are comparable both from the business and consumer perspective. The broad context (e.g., different types of innovations and local settings) of our cases ensured that case particularities (e.g., hatred for a specific brand) did not distort the results. Our intent was to capture a broad range of innovation resistance leaders to be able to understand nuances between them. These case selection criteria are both broad enough to ensure a minimum of generalizability and narrow enough to ensure sufficiently homogenous external conditions. Nevertheless, generalizability is not a primary objective of a qualitative exploratory study. During the case selection, each resistance case had to provide sufficient information sources to enable an in-depth analysis.

After selecting the innovation cases, we identified the resistance leader of each case. We searched in online news articles across different channels and outlets for individuals who (1) are recognized by the media as particularly dominant in or as the face of the resistance or (2) are quoted in the media repeatedly as innovation critics (see Table 1). The outreach to a wider society, which is a central definition of resistance leaders, is thus determined by the domination as a conspicuous resister in these media outlets reaching the masses (i.e., the leader's name appears strikingly in connection with the resistance case).[3]

To avoid outcome bias, which refers to a subjectively distorted evaluation of the data when knowing the outcome or focusing on only one extreme outcome (Collier and Mahoney, 1996), we did not consider whether the resistance leaders were successful or unsuccessful in terms of modifying or preventing the innovation. In addition, our research questions do not concern the outcome, which means that we are not primarily interested in whether the innovations ultimately succeed or fail but are instead interested in how the resistance leaders achieve visibility and outreach. Furthermore, by the time of the data collection, it remained unclear whether the innovations would fail or succeed. However, in each case, we had substantiated reasons to assume that the resistance leader had an influence on the innovation's success. Leader effectiveness depends, among other factors, on the level of power and influence the leader possesses (Sarin and O'Connor, 2009). Here, resistance leaders possess structural power because of their positions (e.g., head of a data protection institution or founder of a free software movement), and they possess thought influence because of their dominant appearance in the media. In some cases, direct links between the leaders' behaviors and consequences for the innovation's fate are observable. For example, Google Street View, which is one of our innovation cases, was introduced with a delay in the German region in which the resistance leader acted ("the protest of the data protectionists likely worked: Google will not create any street images [in that region]

[3] We do not exclude the possibility that more than one resistance leader exists per case. For example, Tami Canal was a resistance leader against GMO products in the U.S., and Alex led the resistance against GMO in Germany. Even in the same local context, we cannot exclude the possibility that multiple resistance leaders exist. However, we selected an individual as the resistance leader in a specific case if the media presented him or her as particularly dominant and if he or she was quoted repeatedly in the media. During our analysis, we further found no strong evidence that resistance leaders cooperate with other resistance leaders in the same context and area. Hence, we expect that there is one resistance leader in a specific (locally bounded) area, but several resistance leaders can exist for one case, and it is possible that these leaders cooperate.

Table 1
Characteristics of Innovation Cases and Resistance Leaders.

Resistance Case Details	Windows 8	Nanotechnology	Google Street View	Agricultural Genetic Eng.	E10 Bioethanol Fuel	E-Cigarettes	Electric Cars	Cloud Computing
Innovation type	Product (branded)	Technology	Product (branded)	Technology	Product (category)	Product (category)	Product (category)	Technology
Main consumer concerns	Functional risks (usability)	Health risks (toxicity, unmanageability)	Norm violation (privacy)	Health/ environ. risks (safety, uncontrollability)	Functional/ environ. risks (damage)	Health risks (toxicity)	Functional risks (price-performance)	Norm violation (privacy)
Resistance leader professional position	Head of technology assessment group (consumer electronics)	Head of technology assessment group (general technologies)	Head of a data protection institution	Leader of actions against agricultural genetic engineering	Head agricultural expert in an environmental NGO	Head of a tobacco control institution	Head traffic expert in an environmental NGO	Leader of a software movement
Region	North America	North America	Germany	Germany	Germany	North America	Germany	North America
Resistance l.	John	William	Michael	Alex	Roger	Paul	Tom	Mark
Resistance leader identification	Quoted as expert in important newspapers (e.g., Financial Times), quotes are repeated in important news outlets	Face of resistance in important news outlets (e.g., Forbes)	Face of resistance in important news outlets (e.g., Focus)	Most famous in resistance, quoted in important news outlets (e.g., taz)	Quoted as expert in important newspapers (e.g., Die Zeit), quotes are repeated in important news outlets	Face of resistance, quoted in important news outlets (e.g., The New York Times)	Face of resistance, quotes are repeated in important online news outlets (e.g., N24)	Face of resistance, quotes are repeated in important news outlets (e.g., The Guardian)
Examples of identification of resistance leaders	*"John is quoted frequently for his opinions on new technologies by CNN, CNBC, BBC, Bloomberg Thomson-Reuters […]"*	*"The science of small might have a big problem. His name is William"*	*"Among the data protection officers in Germany, it is Michael who is a threat to U.S. corporations such as Facebook […]"*	*"Germany's most famous 'free the field' activist," "most famous, militant gene technology opponent"*	*"How environmentally friendly is E10? Contra: Roger," quotes from Roger as "the NGO's agriculture expert" repeated in news outlets*	*"The man who's been called the Ralph Nader of the anti-tobacco movement," "one of the most vociferous proponents of strict rules for e-cigs"*	*"One of the few sharp critics of electro mobility"*	*"Critical voices such as Mark have often warned that the whole cloud system is full of privacy and ownership concerns"*
Leader type	Aggregator	Initiator	Aggregator	Initiator	Hybrid	Initiator	Initiator	Initiator

for Google Street View this year," newspaper article). Table 1 presents an overview of the cases. To ensure anonymity, we replaced the resistance leaders' names with fictitious ones.

3.2. Data collection

Consistent with the triangulation rationale, case study research uses multiple sources of data (Yin, 2009). Our study included three rounds of data collection. First, the first author conducted and recorded in-depth telephone or video interviews with the resistance leaders in 2013 and 2014. We took notes about interesting and surprising statements the interviewees made. After the first round of interviews in six of the eight cases, we noticed that resistance leaders emphasized their personal motivations over their behavioral actions, which made us realize that actions such as media presence or mobilization of others somehow naturally (and perhaps not so much strategically intended) result from their personal drives. Then, in 2014 and 2015, we conducted the remaining two interviews with the resistance leaders and the follow-up interviews with six of the eight resistance leaders to gather more information and to strengthen or discard initial ideas. We also conducted interviews with key informants. We interviewed six informants (specifically, we asked the resistance leaders for permission to interview a close colleague who worked with them and could provide us information on personal aspects and behaviors), and one informant was able to provide information regarding two resistance leaders (the informant knew both leaders). For one resistance leader, we were unable to obtain an informant's view. We used an interview guideline for all interviews that included questions regarding the behaviors and self-identities of resistance leaders (see Appendix A1). The questions were adapted to the context of each case.

Finally, we conducted a systematic secondary data search in 2016 to gather a richer data basis and to avoid bias through the self-perceptional data and retrospective views of the resistance leaders and their informants. We searched online for information on the resistance leaders in the ten most important newspaper archives in the U.S. for the North American cases (e.g., The Wall Street Journal and The New York Times) and in Germany for the German cases (e.g., Bild and Süddeutsche Zeitung) (see Appendix A2). Media analysis is an adequate means of understanding the criticism around new technologies and innovation (Markard et al., 2016) because media can transfer the view of single individuals to a broad audience (reflecting how resistance leaders perceive the innovation and what opinion they spread) and because it provides different critical viewpoints on resistance leaders. Additionally, we systematically researched information in other media outlets such as Google Books, Google Scholar, YouTube, Twitter, and blogs by using keyword combinations of the resistance leader's name and the focal innovation case.

We downloaded all material and ordered relevant material where we did not have access. We fully transcribed the recorded interviews with the resistance leaders and their informants. For the secondary audio or video data (e.g., YouTube videos), we transcribed the parts that were relevant to the case. The data material comprised 20 primary interviews, 46 secondary audio or video interviews and speeches, 478 news articles, 48 books or book chapters, 148 blog articles or twitter accounts, 18 brochures or white papers and 35 web pages. The data sources are shown in Table 2

3.3. Data analysis

We followed the approach proposed by Eisenhardt (1989) for data analysis, which relies on a grounded theory-building process. Consistent with our research questions, grounded theory does not aim to make objective truth statements about reality or to test hypotheses but aims to elucidate new understandings about an interesting phenomenon (Suddaby, 2006). Grounded theory is a creative process that depends on the researchers' theoretical sensitivity (Suddaby, 2006), but

Table 2
Overview of Data Sources.

Case Details	Windows 8 (John)	Nanotechnology (William)	Google Street View (Michael)	Agricultural Genetic Engineering (Alex)
Primary data sources[a]	2 interviews w/RL	2 interviews w/RL 1 interview w/infor.	2 interviews w/RL 1 interview w/infor.	2 interviews w/RL 1 interview w/infor.
Secondary data sources[b]	1 interview w/RL 23 news articles	3 interviews w/RL 14 news articles 1 book chapter 3 white papers 2 blogs/Twitter feeds	7 interviews w/RL 40 news articles 1 white paper 5 webpages	7 interviews w/RL 21 news articles 4 books/chapters 3 white papers 6 blogs/Twitter feeds 2 web pages
Number of coded text passages	207	390	426	645

Case Details	E10 Bioethanol Fuel (Roger) [c]	E-Cigarettes (Paul)	Electric Cars (Tom) [c]	Cloud Computing (Mark)
Primary data sources	1 interview w/RL 1 interview w/infor.	1 interview w/RL 1 interview w/infor.	2 interviews w/RL 1 interview w/infor.	2 interviews w/RL 1 interview w/infor.
Secondary data sources	3 interviews w/RL 39 news articles 1 blog 1 web page	9 interviews w/RL 83 news articles 17 books/chapters 3 white papers 21 blogs/Twitter feeds 5 web pages	2 interviews w/RL 107 news articles 5 books/chapters 1 white paper 10 blogs/Twitter feeds 7 web pages	14 interviews w/RL 151 news articles 21 books/chapters 7 white papers 108 blogs/Twitter feeds 15 webpages
Number of coded text passages	169	1017	593	1589

[a] Primary data sources refer to the interview data which we collected.
[b] Interviews with RL refer to interviews, speeches, and discussions in audio and video outlets (e.g., YouTube).
[c] The key informant of Roger (E10 Bioethanol Fuel) and Tom (Electric Cars) is the same.

transparency and methodological rigor are also important characteristics of high-quality research. Therefore, we followed explicit steps in our data analysis. We coded the data inductively with the support of the qualitative research software MAXQDA in the following two steps: a within-case analysis and a cross-case analysis. This process resulted in more than 5000 coded text passages.

In the *within-case analysis*, the first author read the data material of each case in chronological order and coded passages related to the resistance leader's behavior and self-identity. We followed three coding steps: (1) open coding, (2) axial coding, and (3) selective coding (Corbin and Strauss, 2008; Strauss and Corbin, 1990). The first author started labeling relevant text passages by applying open coding. For example, she used the label "first to identify an issue" for an interview text passage with the e-cigarettes resistance leader who told us about a study he conducted with colleagues that allowed him to reveal negative effects of e-cigarettes: "*This is the first actual data on the effects of e-cigarettes and quitting.*" Subsequently, she applied axial coding by categorizing the codes into emerging themes (e.g., categorizing the open codes "first to identify an issue" and "stirs up debate" into "initiation process") and relating the themes to one another (e.g., "missionary identity" and "initiation process" are related). The within-case analysis resulted in a summary description of each case that resembled the life story of the resistance leaders and contained central open coding elements grouped into emerging themes that relate to self-identities and behaviors, such as prior experiences, basic motivations, roles, ways of working and organizing. For two examples of the within case analysis, see Fig. 2.

In the subsequent *cross-case analysis*, we compared the cases and searched for patterns (Yin, 2009). We discussed different views until all authors agreed with the theoretical model and its reflection in the data. The authors identified that the concept of the process the resistance leaders organize, including the "initiation process" and "aggregation process," is a central and connecting element for understanding resistance leaders because the resistance process type appeared to be systematically related to both resistance leaders' self-identities and further behaviors. Fig. 3 presents the results from the cross-case analysis that is the differentiation between Initiators and Aggregators and the themes that emerged in which they differ.

4. Findings

This section presents the pooled findings of the cross-case analysis. Our cases cover the following technologies and products: nanotechnology, agricultural genetic engineering, cloud computing, e-cigarettes, electric cars, E10 bioethanol fuel, Windows 8, and Google Street View. The most significant finding was that resistance leaders behaved differently and organized the two distinct resistance processes: initiation and aggregation. Thus, we named the two different resistance leader types *Initiators* and *Aggregators*. Both types appeared in both contexts (Germany and North America). In line with self-identity theory, which suggest a link between self-identity and behavior, we found that different social and role identities relate to the organized resistance process and further behaviors (see Fig. 3).

4.1. Resistance process against innovation

Initiators and Aggregators differ in their engagement in and organization of resistance diffusion. An Initiator is among the first individuals to notice a problem with an innovation after (or even before) an innovation launch. When the problem conflicts with the Initiator's mission, they scale up a resistance movement through media. Therefore, this resistance process is called the *initiation process*. For example, Alex (resistance against agricultural genetic engineering) was one of the first people to participate in the so-called "free-the-fields" actions. Paul was one of the first people to make a scientific argument against the proposed benefits of e-cigarettes, which resulted not only in a controversial scientific discussion but also in a media debate. Moreover, in the case of nanotechnology, William's Non-Governmental Organization (NGO) was the first to notice a problem ("*We've been there first looking at the issue,*" William, Nanotechnology, Interview 1), and he also made a significant contribution to driving the debate on nanotechnology as follows:

> "His name and that of his NGO appeared alongside those of top scientists at conference proceedings. […] Yes, they achieved, in spite of their minuscule size and lack of financial means, the position of OPP (obligatory passage point) in the debates: they participated in the major discussions, and references to the position of civil society invariably included allusions to them" (Book chapter on

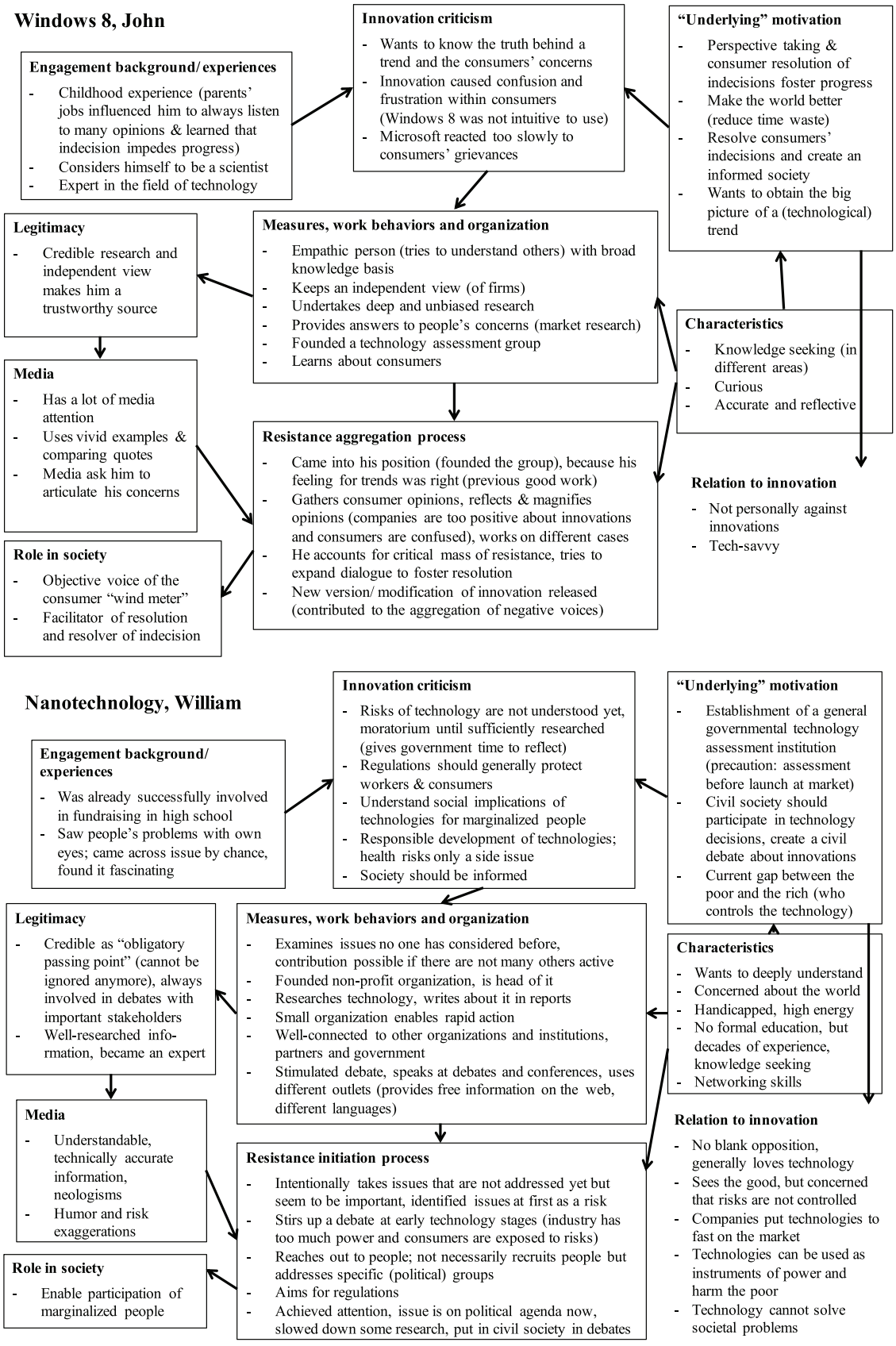

Fig. 2. Examples of Resistance Leaders' Life Descriptions in Within-Case Analysis.

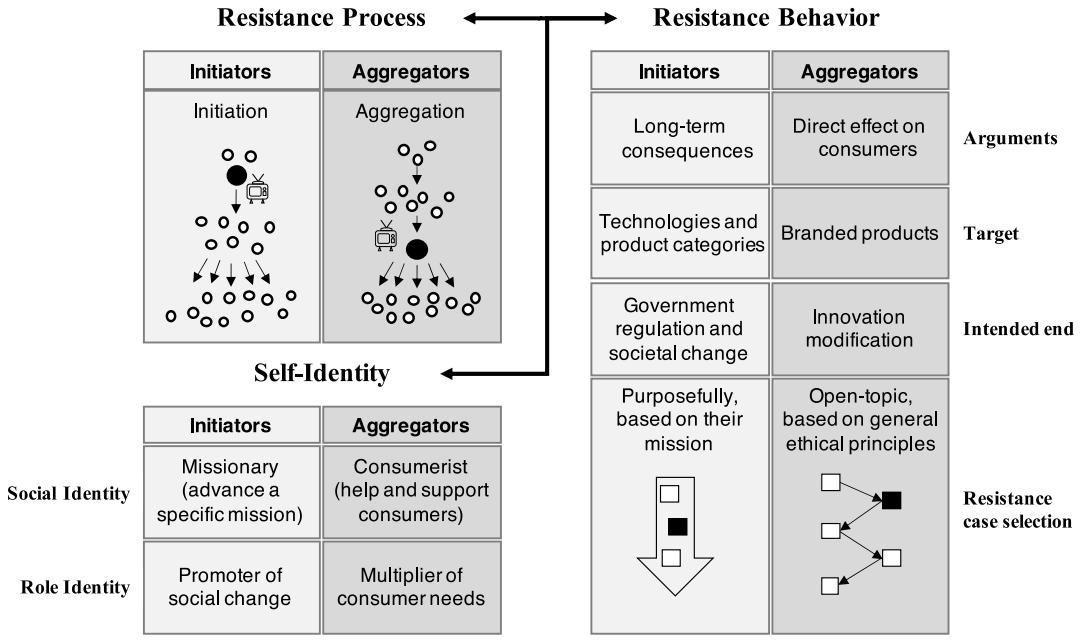

Fig. 3. Theoretical Model of the Resistance Leader Types.

William, Nanotechnology).

Concerning initiation processes, the Initiator makes an effort to trigger and spread resistance:

> "Mark is the main proselytizer. He is powerful, he is—here is what I would say—he is the evangelizer. He goes around and tells everybody about it and talks a lot and all that" (Colleague of Mark, Cloud Computing).

In the case of Aggregators, consumers (i.e., people who are affected by the innovation) were the first to notice a problem after an innovation launch. After a critical mass of resisting people is reached, Aggregators join the resistance movement. Aggregators subsequently amplify people's opinions through the media. Accordingly, we call this process the *aggregation process*. For example, John interviewed people during a technology assessment and noticed their problems during the inquiry. Afterwards, he spread the word about consumer concerns in an important media outlet:

> "This is not me doing this, this is me reflecting what other people are doing. So, I am just a magnifying glass, if you will, of a trend that is already there" (John, Windows 8, Interview 1).

Michael explicitly describes how people approach him with their problems. If he assesses the issues to be relevant, he takes action and disseminates the people's concerns in public:

> "Citizens from suburbs of [city] turned to us and informed us that Google collects data and gathers pictures of their houses. And we investigated this accordingly and came to the conclusion that the fundamentals of legal regulations are not met here. We informed Google and we articulated this in different ways—when you ask them—through media, to the petitioners that turned to us, through press and such." (Michael, Google Street View, Interview 1).

Both Initiators and Aggregators unveil disapproving statements about the innovation in important media outlets. Then, their statements are spread in different other media outlets, which makes Initiators and Aggregators influential leaders of innovation resistance.

4.2. Resistance leaders' self-identity

Social identity. Resistance leaders define themselves primarily according to their basic social motivations, which are a central part of their social identities. We noticed that some resistance leaders follow a more abstract mission on the societal level (i.e., missionaries), whereas others seek to provide benefits for groups of consumers or community members (i.e., consumerists). The social identity of Initiators tends to be *missionary*. They aim to advance a specific mission, which is often consistent with a social system change and sometimes prompted by the desire to persuade or convert other people. Therefore, Initiators do not focus on the concerns that consumers have with the innovation but rather consider the innovation from the perspective of society in its entirety. For example, in contrast to most concerned consumers, Alex is not concerned with the health risks or environmental damage provoked by gene technology. Rather, he criticizes the dependencies and power relations between firms and politics that result from the technology.

> "More important than changing the technology is changing the societal conditions. I do not want gene technology to be gone, but I want institutional domination and capitalism to be gone" (Alex, Agricultural Genetic Engineering, Interview 1).

Similarly, William (nanotechnology) seeks to change society by establishing an international technology assessment organization with civic participation. His criticism does not address the specific risks of nanotechnology, but he claims that for every emerging technology, the implications for marginalized people have to be considered in a joint decision-making process. In addition, Paul (e-cigarettes) seeks to reverse the legitimization of the tobacco industry, Tom (electric cars) fights for the abolition of the car in general, which he considers to be antisocial, and Mark (cloud computing) promotes a world with free software where control is replaced by freedom. Since Initiators focus on society, they sometimes strongly distance themselves from regular consumers. This distancing becomes obvious when they blame consumers for being part of the system and describe consumers as being unable or unwilling to escape consumption.

> "You take a role in capitalism. There are the producers and the consumers. You take the role, and you accept your fate and you try to change things from this position. This is as if women accept, in the scope of feminism, that they are by nature housewives and just fight for the improvement of their kitchen devices […]. It works, but it is dumb to accept the domination" (Alex, Agricultural Genetic Engineering, Interview 1).

In contrast to Initiators, Aggregators tend to have a *consumerist* social identity. Aggregators want to help and support consumers or community members. Therefore, they directly interact with people and dedicate themselves to their problems. For example, John (Windows 8) seeks to help consumers resolve their confusion caused by the new version of the operating system. Personally, he is not opposed to the innovation, but during his technology assessment activities and interviewing, he noticed that consumers have been frustrated.

> "I'm not opposed to Windows 8—except for the people that I've interviewed. And my own experience is that they [experiences] were different than what Microsoft was saying. Microsoft was saying: 'This is better. This is going to make your life better. This makes things simpler.' And unfortunately, almost all of their assurances were incorrect. From my experience and from those that we were interviewing, it was not simpler. It was causing confusion. It was making people who walked up to Windows 8 computers feel stupid or inadequate or frustrated" (John, Windows 8, Interview 1).

John is also described as someone who acts on behalf of consumers ("*I will always remember John for the sort of person he was and […] cared about normal people and end users,*" colleague of John, Windows 8). Michael (Google Street View) is dedicated to protecting people from the privacy violations of companies and acts on the behalf of people as follows:

> "He always enforced what he considered to be right for citizens, consumers and users, without making compromises" (Colleague of Michael, Google Street View).

Role identity. Less central in the data material but still present is role identity, which focuses on the role-related behaviors of resistance leaders. The standards and expectations that come with a specific role guide behavior (Gruber and MacMillan, 2017; Stets and Burke, 2000). Whereas social identity relates more to the group with which resistance leaders identify, role identity describes more their general role in society. Initiators assume the role of *societal change agents* and fighters against harmful societal structures:

> "We're concerned with solving a societal problem: nonfree software" (Mark, Cloud Computing, Newspaper article).

Aggregators represent the voice of the consumers and therefore identify themselves as *multipliers of consumer needs* and problem-solvers for consumers:

> "You have to consider all viewpoints, but in particular the citizen perspective, because they are the least protected, they have the fewest possibilities to handle the issues on their own" (Colleague of Michael, Google Street View).

As these quotes demonstrate, social identity and role identity are strongly linked.

Summing up, Initiators and Aggregators tend to have different social identities and role identities. The missionary social identity of Initiators can be categorized within the collective self-concept identified by previous social identity literature (Brewer and Gardner, 1996; Fauchart and Gruber, 2011) because it focuses on collective welfare for impersonal others on a more abstract level. In contrast, the consumerist social identity of Aggregators is located between the collective self-concept and the relational self-concept because it focuses on the benefits of other people. In contrast to the relational self-concept identified by previous social identity literature, the consumerist social identity does not refer to a mutual beneficial relationship with a specific social group or community but to a one-sided relationship. In contrast to the collective self-concept, the consumerist social identity is less societally oriented and more focused on direct relations to consumers.

Therefore, related to the three central elements of social identities (i.e., basic social motivation, frame of reference, basis of self-evaluation), the basic social motivation of Initiators, who tend to have a missionary social identity, is to advance a societal mission to increase societal welfare. Aggregators, who tend to have a consumerist social identity, are motivated by consumers' needs and want to help and support them. In addition, the frame of reference of Initiators is on a more abstract societal level that is detached from specific people. In contrast, the frame of reference of Aggregators refers to the consumer level and to groups of consumers. Finally, the basis of self-evaluation of Initiators is whether they fulfill their prototypical mission, that is, how much they have moved the current society to an ideal society (e.g., a world with free software only). In contrast, the basis of self-evaluation for Aggregators is whether they fulfill their task of helping other people by comparing the consumers' current grievances with the desired resolution of their concerns (e.g., resolve consumer confusion).

Moreover, the resistance leaders have a specific understanding of their roles (i.e., role identity), which is either the role of a societal change agent in case of the Initiators or the multiplier of consumer needs in case of the Aggregators. Hence, resistance leaders can take the role of "passive legitimizers for existing negative information about a controversial innovation or as active disseminators of anti-innovation information" (Leonard-Barton, 1985: 925). The first refers to the role of a multiplier of existing negative voices, whereas the latter refers to an active change agent. Table 3 summarizes the self-identity concepts of Initiators and Aggregators.

Link between self-identity and the resistance process. The results further show that the self-identities (i.e., social and role identities) of resistance leaders and the resistance processes they organize are linked. Resistance leaders engaging in an initiation process tend to have missionary social identities, and resistance leaders engaging in an aggregation process tend to have consumerist social identities. The following argument can explain the link. Initiators actively pursue a mission as societal change agents and are self-propelled. Therefore, they also initiate resistance themselves. Aggregators are consumerists and multipliers of consumer needs and act on the behalf of consumers. Therefore, they are driven by consumers and become active only after people raise their concerns. Appendix A3 provides additional evidence in four example cases that self-identity indeed influences the selected

Table 3
Self-Identities of Initiators and Aggregators.

	Initiators	Aggregators
Social identity	"Missionary"	"Consumerist"
Basic social motivation	Advance a societal mission	Help and support consumers
Frame of reference	Society	Group of consumers
Basis for self-evaluation	Mission (ideal society) fulfillment	Achievement of desired status for consumers
Categorization (previous social identity literature)	Collective level (collective welfare for impersonal others, no direct relations)	Collective and relational level (benefits for impersonal others, direct relations)
Role identity	Societal change agent	Multiplier of consumer needs

Table 4
Proof Quotes for Social Identity and Resistance Process of Resistance Leaders.

Initiators	Social Identity (Missionary)	Resistance Process Against Innovation (Initiation)
	■ Basic social motivation: advance a societal mission ■ Frame of reference: society ■ Basis of self-evaluation: mission (ideal society) fulfillment	1. Initiator is among the first to notice a problem after innovation launch (the problem conflicts with his or her mission) 2. Initiator scales up resistance movement
Case 1: Nanotechnology (William)	"*Our concern was initially that this was a rapidly expanding technology that was not well understood and that could have very large implications positive and/or negative for society around the world. And we wanted to* ***understand the social and economic impacts of the technology, especially for marginalized people.***" (William, Interview 1) "*We are hoping to* ***achieve a technology assessment facility for the United Nations****. So, like an ongoing intergovernmental forum, where geoengineering or nanotechnology and any of these other issues, 3D-printing or whatever, can be brought to that forum for debate. That's a longer-term goal.*" (William, Interview 2)	"***We have tended to identify issues,*** *whether it's nanotechnologies or geoengineering or synthetic biology or whatever seeds,* ***before others have****. So, we've been there* ***first looking at the issue.***" (William, Interview 1) "*What the NGO had achieved over some six years was to contribute to* ***stir up a controversy*** *around the development of nanotechnologies. […] Nanotechnology regulation was put on political agendas and most institutional debates about the development of nanotechnology included civil society participation under one form or another as appeared in the most recent publications coming from the EU or the US regulatory and research bodies.*" (Paper about William's NGO)
Case 2: Agricultural Genetic Engineering (Alex)	"*The central threat running through my political fights is the criticism of power relations. I am a strong* ***advocate of a society free of domination.***" (Alex, Interview 1) "*I recognize that environmental destruction and power relations are connected. Those who dominate can determine that others have to suffer the damage. This […] drives destruction on a large scale. I started focusing on domination. Today, I would say that this is always my main driver. […] When I occupy a genetically modified test field, I intend to get both GMO-free food production and* ***the end of domination in the world.***" (Alex, Blog interview)	"*It started early. Already in the 90s when [genetically modified] fields appeared. In 1992,* ***there was the first field occupation.****This was still really exciting. Today, these are ancient photos.*" (Alex, Video 6) "*At first hesitantly, but then in Winter 2009/10, [Alex] was invited to presentations on his tours. He himself preferred locations next to the test fields where he could* ***give talks in neighboring gardens, community houses and pubs****. He designed an audiovisual presentation which has now been seen by over 5000 people on more than 100 single events.*" (Alex, Own website)
Case 3: E-Cigarettes (Paul)	"*'I think I'd like to just* ***destroy the tobacco industry****,' [Paul] says bluntly. 'It is an industry that kills 5 million people a year. It has no business existing. Make them go do something useful.'*" (Magazine article about Paul) "*'We* ***can't allow e-cigarettes to establish themselves*** *the way cigarettes have and then, five years from now when we've answered all the open scientific questions, we have to try to stuff the genie back in the bottle,' he said.*" (Newspaper article about Paul)	"*He is one of the* ***founding members*** *of the nonsmokers' rights movement dating back to 1978 when he helped lead the campaign for California's first nonsmoking sections in restaurants.*" (Magazine article about Paul) "*What we found, […] is exactly the opposite of what the e-cigarette enthusiasts were saying, that these things would help people quit smoking. I thought: 'Wow, this is a good result'. […] This is* ***the first actual data on the effects of e-cigarettes and quitting****. […] We published that, and so I've gone from a position of agnosticism to being very skeptical of these things. […] I think the proper way to deal with it, is a scientific discourse wrapped in as a part of this debate. […]* ***I actively participated in lots of policy debates.***" (Paul, Interview 1)
Case 4: Electric Cars (Tom)	"*You had to have this experience how the environment, the city, the* ***social life blooms as soon as the cover car is lifted*** *[…]. Highways are used for roller-skating and skateboarding, suddenly there were people on the streets doing all sorts of things. Just because there have not been any cars.*" (Tom, Interview 1) "*We are for electric mobility, but against electric cars. Electric cars are something that still is a car […] Which occupies the streets and blocks, not only pollutes—polluting is not as bad anymore—but especially takes away space and hinders mobility.* ***Electrifying the car is nonsense, because it does not solve any of the problems.***" (Tom, Interview 1)	"***We fought for years against the car*** *as car, a perverted development of a per se nice vehicle. I mean I also have a car standing outside. The car is something great, but as a mobility carrier inappropriate. I fought this since I have been at [the NGO]. We had campaigns called 'Cars out of the city' and so on.*" (Tom, Interview 1) "*At first glance, Tom, transportation expert at [the NGO] Germany, seemed to be representing a lost cause.* ***He was the only speaker who strongly opposed the electric car*** *as the savior of individual mobility at the [conference name].*" (Magazine article about Tom)

(*continued on next page*)

Table 4 (*continued*)

Initiators	Social Identity (Missionary)	Resistance Process Against Innovation (Initiation)
Case 5: Cloud Computing (Mark)	"*My work on free software is motivated by an idealistic goal:* ***spreading freedom and cooperation****. I want to encourage free software to spread,* ***replacing proprietary software*** *that forbids cooperation, and thus make our society better.*" (Mark, Blog article) "*Innovation will only serve us if we have control over what innovations we'll accept and what innovations we'll reject. So, I do not accept innovation as sufficiently important to justify taking away our freedom. Yes, I'd like innovation all else being equal assuming* ***we have freedom****. But when somebody argues, 'give up your freedom so we can have more innovation', that is literally a Trojan horse.*" (Mark, Blog interview)	"*Discussions of the origins of open source are more contentious than a theological tract, but Mark is usually credited with* ***being the first to crystallize the ideas*** *underlying what's generally known as open source.*" (Newspaper article about Mark) "*That is why, since the mid-1990s, Mark has spent most of his time in* ***political advocacy*** *for free software, and* ***spreading the ethical ideas of the movement****, […].*" (Personal biography) "*Open source advocate* ***Mark caused a storm*** *last month when he declared cloud computing a trap for the stupid.*" (Newspaper article about Mark)
Aggregators	**Social Identity (Consumerist)**	**Resistance Process Against Innovation (Aggregation)**
	■ Basic social motivation: help and support consumers ■ Frame of reference: group of consumers ■ Basis of self-evaluation: achievement of desired status for consumers	1. Consumers are first notice a problem after innovation launch 2. Aggregator joins movement after a critical mass of negative voices 3. Aggregator amplifies people's opinions
Case 6: Windows 8 (John)	"*My true purpose is […] it's really quiet satisfying to be part of the process that* ***helps people discover what they want and not be confused****anymore." (John, Interview 1)* *"I don't want to be embarrassed by promoting something that is false. If I didn't believe the Windows 8 thing I wouldn't have said it to [newspaper reporter's name]. But I believe that* ***people close to me I trust and hundreds and maybe more than a thousand people who we had interviewed****said: 'now this is worse, terrible, awful and you get frustrated.'*" (John, Interview 1)	"*So, fortunately it was a sound argument that reflected with many, many people's opinions and media can magnify this. […]* ***A lot of people turn to me****, so I try not to make mistakes.*" (John, Interview 1) "*Well in the case of for example the quote that got your attention I am looked upon to be let's say a weather banner,* ***a wind direction meter for where people are looking next****.*" (John, Interview 1)
Case 7: Google Street View (Michael)	"*In particular, there should be a right of objection for everybody—for all data in the Internet.* ***People should be able to fight off in an unbureaucratic manner to solve conflicts easily****." (Michael, Magazine article)* *"It is a major annoyance for us and reason for many* ***complains of affected people****: Google does not take their information obligation seriously. […] But each resident is entitled to get information and can ask Google for that."* (Michael, Blog interview)	"*The other story is that* ***we get normal complaints or requests from citizens, which we pursue*** *and where we detect 'oops, there is something fundamental or something wrong with it'. And of course, we pursue every request, but if there is something fundamental to it,* ***we also try to resolve it*** *categorically.*" (Michael, Interview 2) *"Incredibly,* ***many people come to my organization or come to me*** *and say 'you are familiar with intelligence services. I feel observed in my apartment'. […] if we have facts and they are provable, then these are starting points where* ***we can become active.****"* (Michael, Video 4)
Hybrid Forms	**Social Identity (Missionary & Consumerist)**	**Resistance Process Against Innovation (Initiation & Aggregation)**
Case 8: E10 Bioethanol Fuel (Roger)	Purpose Missionary "*But when we talk about E10, E10 is always being produced. You need crops, sugar beets or other plants high in carbohydrate for this. This finally leads to scarcity in the world. […] And then of course the objectives in the longer term, which are reflected in our fundamental philosophy which is* ***sustaining the basis for life*** *and so on.*" (Roger, Interview 1) "*I want an* ***equitable world, where no human being starves,***" (Roger, Interview 1) Purpose Consumerist "***We as consumers foot the bill****. Fuel prices are higher because of the blending of biodiesel and conventional diesel. Also, food prices increase because the acreage where rape, soy and palm oil are cultivated for energy production are now missing for food production.*" (Roger, Blog interview) "*This is an insanity that the* ***car drivers have to pay*** *via higher prices.*" (Roger, News article)	Process Initiation "*In this case,* ***it was me who commented*** *on the subject [E10]; maybe someone else as well, but not more*" (Roger, Interview 1) "*As the responsible person in our group,* ***I was saying 'we should take on that issue*** *as well. I think it is an important one. Next to the ecological perspective, there is also an ethical issue.'*" (Roger, Interview 1) Process Aggregation "*We did not notice the subject [E10] timely or have been busy with other subjects. 'Ok, this is relevant and we have expert knowledge, we go in'. […] Sometimes it is easier,* ***because you jump on subjects that are already discussed in public****. It is easier than doing the entire groundwork, collect facts, get public attention, mobilize and motivate the public, because without them and media nothing works.*" (Informant interview about Roger) "*With E10, people noticed that there is a problem. There have been debates around biodiesel, whether it makes sense or not. And* ***we just used the wave*** *and said 'E10 is absolute nonsense too.'*" (Roger, Interview 1)

Important statements that refer to core conceptualizations marked in bold.

resistance processes and further resistance behavior.

We noticed that the resistance leaders' motivations developed quite early in their careers, sometimes in their childhood. Thus, we have good reason to assume that their self-identity formed prior to the start of the resistance cases analyzed (i.e., self-identity determines selection of resistance cases). However, the resistance behavior itself further defines and strengthens their self-identity during the course of their lifetime.

Table 4 presents further proof quotes for the resistance process against innovations (initiation vs. aggregation process) and for the social identity (missionary vs. consumerist) of each resistance leader's case because both the resistance process and the social identity are defining elements for the two resistance leader types, Initiators and Aggregators. However, resistance leader types also differ in several behavioral dimensions, as demonstrated next.

4.3. Further resistance leader behaviors

Arguments. Initiators and Aggregators also differ in the utilization of arguments against the innovation, especially in temporal scope and immediacy. Initiators criticize innovations because of their *potential negative long-term effects on society*. Criticisms include an increasing gap between the rich and the poor:

> "Like the industrial revolutions that have preceded it, will we see a decline in the well-being of poor people and increased disparity between rich and poor?" (Brochure by William, Nanotechnology).

Other points of criticism are freedom restriction and power dominance ("*The biggest political issue in the world today is resisting the tendency to give business power over the public and governments,*" Mark, Cloud Computing, Speech), as well as the innovation as a barrier to social progress or sustainability ("*If the dominance of the car is reduced, alternative means of transport would be developed: flourishing mobility landscapes,*" Tom, Electric Cars, Magazine interview). Therefore, the innovation endangers the mission of Initiators. Initiators often do not criticize innovations per se but the conditions in which they are implemented. Innovations are an incorrect mean to solve a social issue. Innovations can even enhance or establish social problems as follows:

> "Gene technology is an approach to repair environment and humankind—with technical means, meaning it directs the attention from social aspects to technical aspects. However, the claimed or actual objectives of gene technology are without exception social objectives: health, food distribution (not the increased production, because the amount is not the problem), surveillance and eugenics. If a technical solution is suggested for such issues, then this promotes the extension of engineering thinking as answers to social issues" (Alex, Agricultural Genetic Engineering, Blog article).

In contrast to Initiators, Aggregators criticize innovations due to their immediate and *direct negative effects on people*. For example, Michael is afraid of direct consumer harm:

> "It [Google Street View] might be interesting for cities to discover sights and to aid orientation, but not for a suburb of [city], where citizens particularly got upset. It is tourism-wise and traffic-wise absolutely uninteresting and many people live there, people who are not poor, who are well off, those people quite rightly fear that Street View and Google Earth and other internet services will spy on their privacy so that criminals can single out rewarding targets for theft" (Michael, Google Street View, Interview 1).

Similarly, John speaks for consumers and refers to the troublesome consumer experience with Windows 8 ("*Enough consumers don't know where to go; they are still confused by Windows 8,*" John, Windows 8, Newspaper article).

Target of criticism. The resistance case in which resistance leaders appear tends to relate systematically to the innovation type they target (technology vs. branded product). Initiators are concerned with the potential long-term effects of innovations on society that often appear as *technologies and product categories* (i.e., nanotechnology, agricultural genetic engineering, cloud computing, electric cars, and e-cigarettes). The concerns of Initiators are on an abstract level; therefore, Initiators consider the broad implications of widely applied innovations. In contrast, Aggregators are dedicated to the specific consumer problems that emerge in the innovation cases of *branded products* with which consumers have direct contact (i.e., Windows 8 and Google Street View).

Intended end. Resistance leaders address different parties due to their different intended ends. Initiators seek *social change* and *governmental regulation*. Social change requires actions on a macrolevel. Therefore, addressing the government or other regulators is more effective than addressing a single company.

> "Policy solutions are a lot more effective than trying to preach on people to change their individual behavior. […] And so, doing things to intervene at a policy level creating clean indoor air laws, raising taxes on cigarettes are the kind of things that are being discussed in the soda tax. I think this is the only thing that's going to solve the problem in the end because what it's going to do is change the boundary conditions, change the markets in which these big corporations have to act in a way which is going to force their profit-maximizing behavior to lead to different outcomes" (Paul, E-Cigarettes, Video 5).

Often, Initiators focus on specific addressees in politics ("*A lot of our work is actually just really focusing on perhaps a group of governments and talking to a group of industries and governments,*" William, Nanotechnology, Interview 1). Closely linked to the initiation process of stirring up a debate, Initiators attempt to attract attention, for example, when they aim to force more research to be conducted ("*We didn´t expect our call for a moratorium to be accepted. But we did hope that we cause governments and industries to pay closer attention to this and to try to do the fundamental kind of basic safety research,*" William, Nanotechnology, Interview 1).

Aggregators seek to eliminate consumer grievances in the near future. To this end, Aggregators aim for *modifications of the innovation* ("*Street View is neither the beginning nor the end of an unsolvable enduring conflict, but a significant turning point, which can make Google think about its business practices, about data protection and change its practices,*" Michael, Google Street View, Blog interview). As specific companies launch branded products, the first targets for Aggregators are these companies. John describes how his role as multiplier in the realm of the aggregation process manifests as "the last straw that breaks the camel's back." He was quoted in the Financial Times for comparing Windows 8 to the "New Coke" disaster.

> "Then, it took Microsoft eight months, eight months before there was enough outside logic, to say 'oh we got to go back and do this Windows 8.1 thing.' It was a trigger in this case. If not for the story [in an important newspaper], Microsoft might have gone another six weeks or six months before finally changing things. So, sometimes it takes a social threshold, a critical mass of another opinion to say, 'maybe we were wrong'." (John, Windows 8, Interview 1)

Resistance case selection. Resistance leaders usually do not resist only against a single innovation; their resistance stretches over their lifetimes. For example, e-cigarettes present only one resistance case for the e-cigarette resistance leader, as he was already involved in other resistance cases, including banning indoor-smoking. Initiators *pursue a specific mission* during their lives and create a corresponding broader movement surrounding this mission (e.g., the tobacco control movement in the case of Paul and the free software movement in the case of Mark). Along the path of this mission, specific innovations interfere. For example, cloud computing is one innovation that restricts users' control; therefore, it contradicts the mission of the free software movement. However, cloud computing is only one of several issues that crossed Mark's mission path of a world with free software. Mark initiated a

global movement decades ago. Along this path, he criticizes several subjects that contradict the free software movement such as software patents:

> "Software patents are a danger that affects all programmers and all computer users. I found out about them, of course, in working on free software because they are a danger to my project as well as to every other software project in the world" (Mark, Cloud Computing, Speech).

These cases crossing the Initiator's mission tend to be technologies, such as cloud computing, but can also be products, such as specific computer programs, including Skype. The mission can sometimes even take a religious character if the Initiator acts as a missionary on a conversion mission ("*Mark's fight for free software resembles a religious crusade,*" Book chapter on Mark, Cloud Computing). Because Initiators are deeply involved in their mission, they are also among the first individuals to observe an issue that contradicts their mission in an innovation and subsequently spread resistance. Thus, Initiators select innovation resistance cases based on whether they interfere with their mission.

Aggregators do not have such a specific mission that includes a final objective. Their case selection is often related to their job position where they represent consumers (e.g., head of consumer electronic assessment group or federal data protection representative). However, Aggregators are guided by general ethical principles. For example, in contrast to the Initiator, i.e., Mark who wants a world with only free software, John (Windows 8) is guided by the unspecific principle of solving consumers' daily indecisions without ever specifying an end goal. Accordingly, John actively works on all cases of consumer electronics in which consumers are affected, such as UHD-TV ("*I think that is very universal. That indecision causes doubt. And so, there is a thing now we are tracking called 'UHD-TV'. […] yet some consumers are starting to go: 'I don't know, they are not the same things and everything I see is not reflecting it. I am not sure.' And that causes doubt*" John, Windows 8, Interview 1). These cases are usually products with a direct consumer relationship. In the case of Initiators, innovations cross the mission's path, whereas Aggregators focus on innovation cases that consumers suggest and jump from one case to the next to attempt to solve consumer problems:

> "If one subject is from the table, then Michael thinks: Everything is off the table. He also likes it if everything is off the table. But then he thinks: now comes the next subject, great we need more subjects" (Colleague of Michael, Google Street View).

Thus, Aggregators follow an *open-topic approach* and take over cases in which consumers or communities are potentially harmed.

4.4. Commonalities between resistance leaders

In addition to the differences in their resistance processes, self-identities and behaviors, we also found commonalities between the two types of resistance leaders (i.e., aspects that do not seem to be central to differentiate the two resistance leader types), which we describe only very briefly (quotes and detailed information are available from the authors). Concerning the formation of the resistance leaders' self-identities, we find similar *engagement origins*, such as childhood experiences in a politicized environment, volunteer engagement during their younger years, a negative personal experience, a professional background, and experience with an alternative solution during their earlier years that was perceived as superior to the contemporary innovation approach. Moreover, resistance leaders often share the following *characteristics*: They perceive themselves as knowledge seekers; are technologically savvy and persistent; have high energy; are strong-willed, stubborn, eloquent, persuasive, and courageous; and are equipped with a strong sense of justice. Hence, personal characteristics might influence whether somebody becomes a resistance leader; however, these characteristics seem to have limited explanatory power in differentiating Aggregators and Initiators. Moreover, they share several characteristics with opinion leaders, but resistance leaders have additional traits such as persistence, idealism, and innovativeness that enable a long-term and far-reaching influence. Both resistance leader types stay motivated because of certain *engagement drivers* such as a fascination with the subject, the observation that actions lead to the desired change, and the perception of an entertaining and interesting endeavor. Furthermore, both resistance leaders use similar *measures* to achieve their goals and to gain legitimacy. First, all resistance leaders are embedded in organizational structures such as NGOs or groups, which they have often founded or lead or where they hold an executive position. The strategic positions, like head of technology assessment group, section head of an NGO or head of specialized institutions, enables them to reach a wide audience. Given the early formation of their motivations, self-identities more likely influence the careers resistance leaders chose (and not the other way around). Hence, a central position is an important condition for obtaining media attention and exerting influence, but position alone is unlikely to determine whether a person emerges as a resistance leader. Second, resistance leaders profit from the organizational structures in terms of resources and networks, while they have enough freedom in the organizational structures to act independently. Third, resistance leaders engage in profound analyses of the situation, which involves journalistic information research and even full-scale scientific research. Fourth, resistance leaders are well-connected with other different institutions such as other resistance groups and the media as well as to industry and politics. Finally, resistance leaders, by definition, express their criticism in a way geared towards (social) media but also through multiple different outlets such as their own blogs and websites, interviews on radio, TV or newspaper outlets, public media debates and conference participations, and campaigning or legal debates. However, Initiators tend to use additional measures. They travel around the world to give lectures and speeches. In addition, they sometimes suggest and develop alternative concepts; thus, they even become innovators themselves.

> "After we were getting a bloody nose for years with all different kinds of campaigns against the car—dull and stupid—we then tried to corner the automobile industry by showing: There is another way. And then we found […] firms that constructed an engine for us, constructed a car, which immediately cut fuel consumption in half" (Tom, Electric Cars, Interview 2).

Finally, *communication strategies in the media* such as the use of metaphors, neologisms, risk exaggeration and visualization help both resistance leader types to get attention.

In addition to the commonalities, we find a *hybrid form* of a resistance leader type (see Table 4). Roger (E10 Bioethanol Fuel) combines elements of both Initiators (missionary identity, initiation process) and Aggregators (consumerist identity, aggregation process). The finding of a hybrid form in our data demonstrates the boundaries of the new theory because there are not only conceptually pure types but also individuals who do not fall perfectly into one of the conceptually extreme endpoints. Hybrid forms have also emerged in other conceptual contexts. For example, Fauchart and Gruber (2011) identified 11 of 49 founder identities as hybrid forms, and York et al. (2016) found 9 of 25 founder identities to be blended.

5. Discussion

5.1. Theory contributions

We revealed two different types of innovation resistance leaders and show how their self-identities relate to different behaviors. These findings contribute to innovation adoption and resistance as well as to innovation diffusion literature.

First, this study contributes to the literature on innovation resistance by conceptualizing and validating a new type of resister at the

microlevel, i.e., resistance leaders. Previous research differentiated resisters according to their attitudes and cognitive processing efforts (e.g., Talke and Heidenreich, 2014). We now recommend that scholars also conceptualize individuals according to their outreach to identify individuals with particularly strong influence in the resistance diffusion process. Resistance leaders differ from nonadopters and negative opinion leaders because they have an exceptional outreach to wider society. Nonadopters are described as cognitively rigid, conservative and passive (Heidenreich and Handrich, 2015; Rogers, 2003), whereas resistance leaders are proactive. Moreover, innovation literature acknowledges the role of opinion leaders but focuses almost exclusively on individuals who spread innovation-promoting information (e.g., Iyengar et al., 2011) and conceptualizes the reach of opinion leaders as limited to their immediate social surroundings (e.g., Van Eck et al., 2011). In contrast, resistance leaders are innovation-opposing and have far-reaching influence. They share several characteristics with positive opinion leaders that enable influence, such as being knowledgeable and well-connected (Goldenberg et al., 2009), but resistance leaders also have additional traits such as persistence, idealism, and innovativeness that enable long-term and far-reaching influence. Hence, resistance leaders are neither nonadopters nor opinion leaders and represent a new and previously overlooked type of resisting individuals in innovation management. Further research thus must acknowledge that resistance leaders with a large outreach are different and behave differently than other resisters.

Second, research on innovation resistance investigates barriers of individuals towards innovations (Claudy et al., 2015). However, this line of research narrowly focuses on a "resistance against" perspective of nonadopters, while overlooking the societal roles and social aspects of active opposition (i.e., a "resistance for" perspective). We question the oversimplification of resisters in the previous innovation resistance literature as innovation adversaries. The notion of proactive and innovative resisters, such as Initiators who can become innovators if they decide to develop alternative solutions, has not been emphasized previously. Interestingly, neither Initiators nor Aggregators want to impede progress per se, but both strive to help consumers or society as a whole. Therefore, this research can contribute to the extant literature by shifting the thinking and by moving away from a perspective that regards resisters as motivated by self-interest to a perspective of "social" resisters who are motivated by the purpose of benefiting personal or impersonal other people (Fauchart and Gruber, 2011). Hence, when researching individuals who promote or oppose innovations, scholars must investigate the underlying causes of their behavior, which can indeed be prosocial and might help to avoid negative consequences of innovations.

Third, innovation resistance research rarely goes beyond the study of resistance arguments and falls short of understanding underlying motives and identities as well as resulting behavioral consequences. Previous research identified several psychological and functional barriers (Claudy et al., 2015; Mani and Chouk, 2018). However, we show that self-identity drives such barriers, thereby revealing the underlying causes of stated arguments. Resistance leaders with missionary social identities criticize the potential long-term effects on society (i.e., psychological barrier arguments), and resistance leaders with consumerist social identities criticize the immediate negative effects on consumers (i.e., functional barrier arguments). Previous research has focused on the rationales for resistance (Chen and Kuo, 2017; Kleijnen et al., 2009), whereas our research focuses on the persons who are responsible for creating rationales (Initiators) or amplifying these rationales (Aggregators). Hence, understanding self-identity enables the innovation adoption and resistance literature to reveal *why* individuals express certain arguments. Previously, almost no research has investigated how motives for resistance and resistance behavior relate. We shed light on the unique ways self-identity and behaviors relate in the context of innovation resistance. Moreover, linking self-identity to behavior allows us to better predict the adoption and resistance behaviors of individuals in general. For example, positive opinion leaders could recommend innovation to benefit personal or impersonal other people. Benefiting personal others likely results in a smaller outreach of measures taken than benefiting a wider society. Hence, when scholars understand the self-identity of individuals, they can better explain individuals' behaviors.

Fourth, this research shows that self-identity theory can be valuable for understanding individuals' adoption and resistance behavior. As personality traits only have limited power to explain differences in individuals' behaviors (Keh et al., 2002), entrepreneurship researchers have called for the use of an identity perspective to better understand behaviors (Gruber and MacMillan, 2017). To our knowledge, our study is one of the first to systematically apply the self-identity lens to innovation adoption and resistance research. Seminal work exploring self-identity shows that the social identities of individuals are focused on a personal, a relational or a collective level (Brewer and Gardner, 1996). Resistance leaders' social identities include the collective level (i.e., benefiting impersonal others) and, partially, the relational level (i.e., benefiting personal others). The consumerist social identity of Aggregators refers to benefiting impersonal consumers, and the missionary social identity of Initiators refers to benefiting society. It is likely that other key individuals in innovation adoption and resistance (e.g., adopters, nonadopters, positive opinion leaders, and negative opinion leaders) can also be differentiated according to their self-identities. Hence, we recommend that scholars apply the self-identity lens. For example, positive opinion leaders can similarly foster innovation either out of self-interest (i.e., personal self-concept), if they recommend an innovation to be perceived as progressive to their friends, or to benefit personal or impersonal other people, if they truly perceive the innovation as helpful to other people and society (i.e., relational and collective self-concept).

Fifth, we identified two distinct resistance diffusion processes (i.e., initiation and aggregation) that have not yet been discussed in innovation diffusion literature. Diffusion processes can take the form of broadcasting (i.e., diffusion through a single source that reaches many people) or viral processes (i.e., diffusion through peer-to-peer spreading in multiple generations) (Goel et al., 2015). We demonstrate specifically for the case of innovation resistance leaders how such resistance diffusion processes take place. In the case of the initiation process, the resistance process starts with one individual who uses both broadcast mechanisms (e.g., media attention) but sometimes also viral mechanisms (e.g., traveling for lectures) to spread resistance. In the case of the aggregation process, the resistance process starts with different negative voices (that might spread through viral processes) that are then amplified by a broadcast mechanism via the innovation resistance leader. Hence, we show how, when and under what conditions previously discussed diffusion mechanisms take place. Scholars can now incorporate initiation and aggregation processes in other diffusion contexts to better explain innovation and resistance diffusion.

Sixth, innovation diffusion literature often focuses on the structural aspects of opinion leaders in innovation networks such as tie strength and network positions as well as large-scale diffusion patterns (Cavusoglu et al., 2010; Iyengar et al., 2011; Jha and Saha, 2020; Van Eck et al., 2011). Such research often uses modeling approaches to understand how innovation spreads. Because of the nature of such research, models assume specific roles of individuals (e.g., adopters, resisters) but neither empirically test their actual nature nor incorporate the nuances of individual actors (e.g., Cavusoglu et al., 2010; Goldenberg et al., 2009, 2007). The ways microlevel elements (i.e., individual actors such as resistance leaders) and macrolevel elements (e.g., patterns of diffusion) interrelate is little understood. This study makes a first step towards connecting levels of analysis and provides some initial explanations for how individuals' self-identities link to the diffusion process (initiation vs. aggregation processes). We show that it is of high importance to not only consider the macrolevel but also explain how it relates to the individual level. Following our results,

diffusion simulations and models can consider different types of resistance leaders and enhance the accuracy of modeling approaches. Initiators, for example, can be modeled as hubs that initiate negative word-of-mouth that spreads beyond direct social ties. Aggregators can be modeled as multiplier hubs that are contingent on whether a critical mass of negative voices reaches them.

Finally, previous innovation diffusion research has investigated descriptive individual actor characteristics (e.g., embeddedness, tie strength, and demographics) and how these characteristics relate to the extent of influence on others (Aral and Walker, 2012, 2014; Van Eck et al., 2011). However, such previous research cannot predict a priori the emergence of different resistance leader types. This difficulty arises because descriptive individual characteristics likely do not differ strongly between different resistance leader types—at least, our study did not reveal strong evidence. Diffusion studies do not explain *why* individuals become influential and possess these descriptive characteristics. By considering resistance leaders' self-identities, researchers can now predict who becomes an influential and how resistance leaders behave differently (e.g., whether they target governments, firms, products or technologies). For example, when scholars research the self-identity of individuals, they can then more accurately model their likely behaviors. In short, self-identity perspectives allow researchers to predict resistance leaders *a priori*, in contrast to revealing the characteristics of such leaders *a posteriori*. Hence, considering individual aspects such as self-identity and motivation allows researchers and practitioners to predict how far the outreach of a resisting individual is likely to extend.

5.2. Managerial implications

Innovation diffusion can either be accelerated or impeded, depending on influential individuals in these processes. Although previous research suggests several instruments to address nonadopters, such as benefit comparison or mental simulation (Heidenreich and Kraemer, 2015), resistance leaders need to be treated differently than nonadopters.

To identify Initiators, decision makers should be alerted when the first individuals start campaigns or publish research opposing the innovation. For example, both Tami Canal (GMO food) and Mila del Mier (genetically modified mosquitos) initiated campaigns (a Facebook group and a petition on change.org) against the technologies. Companies need to monitor social media and relevant community channels and could be alerted early on when such campaigns are launched and thus are able to contact the Initiators. If these individuals not only share general consumer concerns but also criticize current societal structures, they are likely to be Initiators with a missionary social identity. When Initiators emerge, decision makers should consider their societal concerns, which could result in future governmental regulations that limit innovation diffusion. Therefore, Initiators can serve as a "telescope" for potential future regulations. In contrast to establishing media campaigns to convince nonadopters, managers can include Initiators in the research and development of new technologies and identify solutions to the perceived risks in an early technology development stage (e.g., conduct more research to minimize the risks and establish technology assessment facilities) because resistance leaders are knowledgeable and Initiators in particular have the potential to be innovative. Hence, resistance leaders can be used similarly to lead users in the innovation process (Bilgram et al., 2008).

To identify Aggregators, managers should monitor social media, online forums, and websites that express criticism collectively. In contrast to Initiators, Aggregators with a consumerist social identity serve as the voice of consumers. For example, in the case of the Adidas sneakers that were reminiscent of slave shoes, Jesse Jackson only entered the debate after a large number of negative voices that criticized human degradation had emerged below an Adidas Facebook post. When reviewing such consumer concerns early on, companies could also actively search for important individuals who repeatedly use media to express concerns on behalf of consumers in similar contexts (e.g., Jesse Jackson is generally an important representative of African American civil rights). In contrast to nonadopters and opinion leaders, Aggregators reach out to many people and are, therefore, crucial catalysts of negative word of mouth. Thus, decision makers should conduct targeted searches for specific individuals and not uniformly address consumers with mass marketing campaigns. They can search for such individuals, for example, when monitoring individuals with many ties and individuals whose posts have been shared many times. Market research and dialog with Aggregators could help identify and relieve consumer concerns. Managers could then address these concerns (e.g., modification of the innovation and addressing concerns in marketing) before a media storm breaks out. An adequate reaction to resistance leaders may help prevent innovation and new technologies from failure.

5.3. Limitations and future research

This study is not free of limitations, which present interesting avenues for future research. First, we have identified five Initiators but only two Aggregators (and one hybrid). One could argue that our findings related to Initiators are based on more empirical evidence than are our findings related to Aggregators. However, we did not specifically sample for these two types of resistance leaders. Hence, we could not determine a priori the amount of empirical evidence needed for each type. Moreover, Initiators may emerge more often than Aggregators. In addition, the social identities of Aggregators and Initiators are theoretically grounded in social identity theory; therefore, they are not based purely on empirics but are supported by a theoretical concept. This research could be extended to explore differences of resistance leader roles within and outside of organizations. Resistance to change in organizations is an important research field (e.g., Ford et al., 2008; Oreg, 2003), and understanding the self-identities and behaviors of resistance leaders in this context is likely valuable, although such leaders are more limited in their societal influence due to organizational boundaries. Moreover, social movement theory and technology diffusion share many similarities (Hargrave and Van de Ven, 2006). However, previously, social movement theory has emphasized collective actions (Hargrave and Van de Ven, 2006) and placed less emphasis on individuals. It would be of great interest to investigate the role of movement leaders in this context. The way self-identity and behavior relate in such settings would be useful to explore.

Second, the resistance leaders in our cases are all male. We sampled cases rather than people and selected within the sampled cases the individuals who have been most prominent. In all eight cases, these individuals were male, which may reflect unequal gender ratios in leadership positions to a certain extent (Oakley, 2000). However, some resistance leaders are female (see examples in the introduction). Unfortunately, we could not include the introductory cases in our analysis because Tami Canal (GMO food) was not accessible for interviews and Mila de Mier (genetically modified mosquitos) passed away recently. Although women have been shown to have different leadership styles than men in other contexts (Eagly and Johnson, 1990), the informal analysis of Tami Canal and Mila de Mier did not reveal strong differences to their male equivalent (presumably Tami Canal is an Initiator with a missionary social identity and Mila de Mier was an emerging Initiator). However, digging deeper into potential gender differences is likely worthwhile for future research.

Third, our study focuses on the microlevel of analysis to understand individual resistance leaders, and we revealed only a rudimentary understanding of how an individual's nature relates to structures, positions and processes. Resistance leaders interact with their environment, and it would be of great interest to study exactly how the individual, collective and structural elements interplay (the mesolevel). Surprisingly, collective action was not an overly present theme in our research. The resistance leaders indeed stated occasionally that social capital, such as

networks and relationships with several actors and institutions, is important. However, they emphasized independence and unilateral efforts. One reason for this finding could be that resistance leaders exert influence mostly via media attention due to their (professional) positions rather than via direct ties to other individuals. Future research could shed light on the network of resistance leaders and how network characteristics relate to different types of resistance leaders. In addition, we did not study whether resistance leaders are successful in terms of innovation failure and how they influence the fate of innovations (the macrolevel). We also do not know how innovation-promoting and innovation-opposing diffusion processes interact. The more detailed connections to the mesolevel and macrolevels of analysis represent the current next steps for future research.

Fourth, our study began in 2013 and focused on resistance leaders who possess important formal and informal positions at institutions and movements that facilitate mentions in (online) news media. Although the Internet is an important media source for resistance leaders and we included social media outlets in our data analysis, resistance leaders in our cases are not online movement leaders per se. Online movements represent a phenomenon that has gained importance in recent years (e.g., the Egyptian revolution in 2011, "#BlackLivesMatter" in 2013, "#JeSuisCharlie" in 2015 and "#MeToo" in 2017). These movements specifically arise because of social media. Our introductory examples, i.e., Tami Canal and Jesse Jackson, specifically used Facebook as a social media platform and are more closely related to online movements. Neither leader was open to an interview, but an initial analysis of both cases reveals similar processes to our analyzed cases (Tami Canal engaged in an initiation process and Jesse Jackson engaged in an aggregation process). Hence, although we cannot call these cases online movements, the results might be transferable to such settings. Hence, theoretical mechanisms can be similar in digital and nondigital settings (Goel et al., 2015) and could allow for broader generalizability beyond the innovation context. However, the ways mechanisms and processes of resistance change in the digital age might be of interest for future research. We hope that our study provides inspiration for future research to further develop our understanding of the role of resistance leaders in innovation management.

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APPENDIX

Tables A1 and A2

Table A1
Interview Guideline (Example Questions).

	Resistance Leaders	Key Informants
Self-identity	■ Why are you against Y? Why do you actively engage in the resistance? ■ How did your engagement start? How did your conviction develop? ■ How would you describe your role in the resistance against Y? ■ Why are you (still) dedicated to this fight? Why this subject? ■ How would you describe your societal role? ■ Why do you think you are successful? Which idiosyncrasies and behaviors help you?	■ What drives the engagement of X? What motivates X to stick to the subject? ■ How would you describe X's role in the society? How would you describe X's role in the debate? ■ Which personality traits and behaviors help him/ her execute this work so well? Why do you think s/he is so successful and receives so much media attention?
Behavior	■ How did you get into the issue? How did the debate emerge? ■ How do you organize the resistance? ■ Which role does the institution/ do other people play? Which means do you use to spread resistance? How do you convince others? ■ Describe other projects you support or oppose.	■ How do such debates emerge? ■ How have you experienced the resistance against Y? ■ How does X organize such projects? ■ How would you describe his/her working manner? What is different to yours? How would you describe your work cooperation?

Table A2
Secondary Data Sources.

	North America Cases	German Cases
Most important newspapers[a]	Alliance for Audited Media, Top U.S. newspapers for March 2013: https://inewsdesign.com/2013/04/30/top-25-u-s-newspapers/	Statista, Top 7 German newspapers of 2016: https://de.statista.com/statistik/studie/id/ 25,727/dokument/ueberregionale-tageszeitungen-statista-dossier/
Top 5 newspapers (online accessed)	The Wall Street Journal The New York Times USA Today Los Angeles Time New York Daily News	Bild Süddeutsche Zeitung Frankfurter Allgemeine Zeitung Die Welt Handelsblatt
Other newspapers (online accessed)	New York Post, Washington Post, Wired, Forbes, The Huffington Post, Bloomberg Business Week, Fortune, Harvard Business Review, ZDNet, Reuters, Fox News, Daily News	Die Zeit, Spiegel, T3N, Wirtschaftswoche, Der Stern, Focus, n-tv, N24, Heise, Reuters, Die Tageszeitung (taz)
Other sources (articles, audio, videos)	Google (first 10 pages), Google News, Google Books, Google Scholar YouTube, Twitter accounts Personal/organizational websites and blogs	
Keywords	Newspapers: resistance leader name; other sources: resistance leader name AND case name	

[a] The most important newspapers refer to printed media. However, this list also includes the Top 5 newspapers ranked by online access https://www.statista.com/chart/1336/top-10-newspapers-in-the-us/ (U.S.) and https://de.statista.com/statistik/daten/studie/273789/umfrage/reichweite-der-meistbesuchten-nachrichtenwebsites-zielgruppe-ab-10-jahre/ (Germany).

Appendix A3. Example Cases

Example Case 1: Paul (E-Cigarettes)—Initiator, Missionary Social Identity

Paul is an Initiator, and his fight against e-cigarettes is embedded in a larger missionary fight against cigarettes and the cigarette industry in general. He has been an activist since his youth and was first involved in environmental activities before he came to the fight against cigarettes.

"Well, I never liked smoking. My parents smoked, I didn't like the secondhand smoke and some air smell. Back in the late 70′s, when I got involved, and I had done some work on some environmental issues before that. And in fact, still, I'm now on the scientific oversight panel through the risk assessment work done by the California Environmental Protection Agency. I'm still actively involved in environmental stuff. You know, I just thought of cigarettes; you know the 70′s is when the whole environmental movement got going, and I was looking at cigarette smokers in our air pollution. There were a few other people with also that perspective and I kind of fell into and I got into and I realized this is a very important problem. There weren't many people working on it, especially with the perspective I had. And just the press of events that kept me there. It's a bit an opportunity to make a lot of contributions, it's made a difference. So even in Germany, which is probably the most tobacco friendly government in Europe, there has been a lot of progress. I actually just went through the Frankfurt airport a month ago, and the last time I was there, you could smoke everywhere and now they have little cubicles. So, it's making a huge difference all around the world." (Paul, Interview 1)

He was a researcher (and still is) and decided to dig deeper into the field of smoking. He decided that he wanted to dedicate his professional career (research) to this field.

"But I did my undergraduate work in aeronautics and then worked for the space agency in Houston during the Apollo program. […] So, the project I was working on for my PhD started out trying to develop a mathematical model of the heart, which is not easy. […] So, my dissertation ended up being about heart muscles. That led me into a post-doc in cardiology at Stanford. Then here at [organization's name], which led to a faculty position as an assistant professor of medicine in the cardiology position. I ran an animal research lab for many years, studying basic cardiac mechanics. The smoking stuff was something I just got interested in some sort of sideline initially. My first active involvement was in 1978, when there was an initiative, which is a direct, enacting the law by direct popular vote in California to have no smoking sections, not smoke free just no-smoking areas. I have been involved in other initiatives, and I thought it was an interesting issue and I have a little asthma, so I didn't like being around cigarette smoke. I went down to volunteer and been there ever since. In the early nineties I started doing active research in that area; before that, I was just doing public education and policy work." (Paul, Interview 1)

He has been an activist against smoking since the 70s and usually focuses on the fight for or against regulations and lawsuits.

"Paul and his research team conduct detailed studies of tobacco control policies and work closely with health advocates to push for strict anti-smoking laws across the country and around the world. Paul is all too familiar with the subject. He is one of the founding members of the nonsmokers' rights movement dating back to 1978 when he helped lead the campaign for California's first nonsmoking sections in restaurants. 'I was one of the people who got the whole clean-air movement going in California,' he says. 'It is very gratifying to go places that are smoke-free now. All of Italy, Ireland and England are smoke-free. You can go out to eat, you can go to a bar, and nobody is smoking.'" (Report about Paul)

"Paul has done as much as anyone to put smoking on the public agenda. His-landmark work on the dangers of secondhand smoke launched smoking bans in public places from restaurants to airplanes. Dubbed a 'pain in the butt,' he was one of Newsweek's 100 newsmakers of 1995. In a recent book, [book name], New York Times tobacco writer [author name] calls him one of the Seven Samurai of the anti-tobacco movement. Paul showed up on an ABC News special in July to analyze the industry's political clout and called tobacco executives 'cockroaches'." (Article about Paul)

Presumably, because of his mission to fight cigarettes in general, he was also one of the first to resist e-cigarettes (he conducted initial research on the negative effects of e-cigarettes and cessation) and push this criticism in the media.

"What we found, […] is exactly the opposite of what the e-cigarette enthusiasts were saying, that these things would help people quit smoking. I thought: 'Wow, this is a good result'. […] This is the first actual data on the effects of e-cigarettes and quitting. […] We published that, and so I've gone from a position of agnosticism to being very skeptical of these things. […] I think the proper way to deal with it, is a scientific discourse wrapped in as a part of this debate. […] I actively participated in lots of policy debates." (Paul, Interview 1)

Similarly, for e-cigarettes, he also focuses on regulations and lawsuits instead of fighting one company directly.

*"*If you go [to] the end, there are some policy recommendations, which I think in light of the evidence is accumulated since we wrote it, are still valid. My first priority is to get e-cigarettes included in smoking restrictions, because people shouldn't hand**—**there is no question that e-cigarette aerosol pollutes the air and people absorb toxic chemicals. And they shouldn't have to. I think the act of doing that will also prevent/reduce the normalization of e-cigarette use, which is a good thing. I think they should be subjected to the same advertising and marketing restriction as cigarettes. I think that the big e-cigarette companies are being careful about this, and a lot of others aren't, and the cigarette companies are kind of free riding on it, but they should not be allowed to make cessation claims until there is evidence, that the claims are true. And that evidence has been accepted by appropriate government authorities. And I think there ought to be tax in an appropriate rate, although it's hard to decide what that rate would be, and how you would actually do it*." (Paul, Interview 1)*

"'We can't allow e-cigarettes to establish themselves the way cigarettes have and then, five years from now when we've answered all the open scientific questions, we have to try to stuff the genie back in the bottle,' he said. For now, he said it was crucial to maintain advertising restrictions and establish a ban on indoor use until it is clear that secondhand vapor is not dangerous and to maintain smoke-free environments that encourage cigarette cessation." (Article about Paul)

Occasionally, Paul criticizes a specific firm or product, but his criticism is intended to reach governmental authorities to establish or change laws.

"Lauren Lempert and I just sent this letter to Mitch Zeller at FDA urging them to withdraw the PMTA awarded to 22nd Century very low nicotine cigarettes. This letter raises issues beyond the issues with the MRTP public comments we recently submitted." (Blog entry, Paul)

"However, scientists have cast serious doubt over the health claims for IQOS. Paul, a tobacco specialist at the University of X, said that he and his team had gone through the 'several thousand' pages of Philip Morris's submission to the US Food and Drug Administration for IQOS. 'The most fundamental observation about IQOS is that if you take [Philip Morris's] data, it doesn't support their claims that IQOS is better than cigarettes,' he said." (Article about Paul)

Summing up, the origins of Paul's resistance to e-cigarettes are his life-long fight against cigarettes in general (this is the mission he seeks to advance). He decided to focus his professional career on research about the effects of cigarettes. He usually conducts research and supports or fights laws and regulations in the context of cigarettes.

Example Case 2: William (Nanotechnology)—Initiator, Missionary Social Identity

William realized early that he really wanted to make a contribution to the world, especially for marginalized people, and he also wanted to understand things profoundly. His motivation seems to relate to a general concern about the world. As a long-term mission, he wants the implications for marginalized people to be included in technology decisions and regulations.

"Well, first I dropped out of high school. And my first experiences were involved in fundraising for just international charities basically. And I was very successful at that time, I was very good at doing that in Canada and internationally. And before long, it got to be very tiresome because it was so superficial, and I was also very skeptical about the quality of the aid that was being provided. And so, I took a year off and travelled as backpacker around the world and decided I really wanted not to be superficial but really wanted to understand the issues. And while I was travelling, I came across the issue of seeds, of the genetically [sic] modification of seeds. It was really by accident. I was working with Oxfam on a contract to look at why there was malnutrition on tea estates in Sri Lanka. And farmers, they were helping smugglers into the tea estates, told me that there was a problem with the rice varieties. […] We began to look at what else was up there that is affecting or could affect marginalized people, and one thing led to another." (William, Interview 2)

"Let me find the right words. I don't see him being profane, I don't see him seeking just recognition or any of this, I don't see that. I'm seeing him really, really worried about the state of the world in general. Especially around the food production. So, any new technologies, or anything that affects food production, I see him very, very involved, in a very worried kind of way. He is really, I think he is generally worried about this." (Informant about William)

"I'm not sure what drove him to that in the beginning, I know, he has been his whole life in this theme and these issues. His-whole professional life. You know his age now, right? 67. So I see him really, really worried about these issues in a very personal way. But I am not sure what drove him in the first place." (Informant about William)

"Our concern was initially that this was a rapidly expanding technology that was not well understood and that could have very large implications, positive and/or negative, for society around the world. And we wanted to understand the social and economic impacts of the technology, especially for marginalized people." (William, Interview 1)

"We are hoping to achieve a technology assessment facility for the United Nations. So, like an ongoing intergovernmental forum, where geoengineering or nanotechnology and any of these other issues, 3D printing or whatever, can be brought to that forum for debate. That's a longer-term goal." (William, Interview 2)

To make sufficient contributions, he focuses on issues no one else has examined before. Hence, he performs an initiation process.

"We tried to take on issues that aren't already being addressed. Because we are so small, we contribute very little to an ongoing debate if, for example, the case of biotechnology, where we were initially back in the seventies near the eighties, but at a certain point clear that Greenpeace and Friend of the Earth and all kinds of groups were working on biotechnology, so our contribution was really marginal. So, it was no point to stay there, whereas with nanotechnology we saw that, frankly, it seems to become very important and no one was working on, so we felt like we had to, same with geoengineering and synthetic biology. There are areas were clearly something was happening, and it could be extraordinarily important for marginalized peoples, and no one was talking about it. We are not intentionally trying to drive a debate; we just found these gaps." (William, Interview 2)

He usually seeks the attention of governments to draw attention to the technologies.

"Well, I hope that we are credible to the governments that we talk to. In the United Nations meetings, we've been around for more than 35 years, so we've got a history with governments, so they do know that we are accurate, we are rarely, fortunately, never accused of being having bad data, or being wrong about information." (William, Interview 1)

"Well, at least it draws attention to it, governments' and societies' attention to technologies. […] We've supported, for example, gene bank technologies for a storage of seeds and felt it and encourage more such gene banks to be developed. So, it is not automatic that we… and we've actually encouraged that the gene bank should be held and take community levels around the world. So, we're actually promoting some of that." (William, Interview 1)

He focuses on larger technologies like nanotechnology, biotechnology, geoengineering, synthetic biology and gene bank technology and does not mention single companies or products. Because he has this broader mission (revealing implications for marginalized people), he also focuses on the levers with the greatest impact, which are technologies and the regulations government enact for such technologies.

"William stirred up a hornet's nest for biotech. Will he do the same for nanotechnology? The science of small might have a big problem. His-name is William, and he is a high school dropout from Canada with no scientific training. Yet his Ottawa organization, the X Group, is widely credited with being one of the first to raise health and environmental concerns about genetically modified food. Its efforts, along with those of other outfits like Greenpeace, led to a public relations fiasco for the biotech industry. In Europe the name Monsanto, which sells genetically modified seed, still exemplifies the ugly American multinational. Because of the fear William helped generate, Nestlé and others don't sell food with GM ingredients in Europe. Restaurants post signs assuring customers meals are virtually GM-free. Now William, 57, has set his target on nanotechnology, the business of manufacturing on a molecular scale." (Article about William)

Example Case 3: John (Windows 8)—Aggregator, Consumerist Social Identity

John recognized the problem of people's indecision very early in his childhood. He regards his job to be resolving people's indecisions in the areas where they feel indecision. This principle drives him to aggregate consumer voices and multiply them, but it is not a specific mission that has an end-goal like in the case of Paul and William.

> "Now the father of mine, get this, my mother was a legal secretary, most important in her career, beyond some psychology and journalism, and so I was blessed to see how lawyers worked way back in the 1960′s. […] So when I was growing up, if a company sued another company, and there usually was a reason, the other company was harming the company complaint, it was solved in weeks and months. Now, whether it's the United States or Asia or Brazil or Western Europe these court battles take years, years, and years. […] If you want to have progress, you need faster resolution of this. So, I find myself frustrated by this. I know many, many brilliant lawyers. And I know many of them seeing the situation get worse, and they don't know how to make it better. So, we have a situation where there may be a better medicine, maybe a better energy-saving technology, and if the incumbent has more money than the newcomer, unfortunately, they are able to delay, perhaps as a matter of business. And therefore, society never gets a chance for the better technology." (John, Interview 2)

> "My true purpose is to—I don't know if you have seen a website or even my little paragraph on Skype—but it's really quite satisfying to be part of the process that helps people discover what they want and not be confused more. Confusion leads to stress. Stress is not a desirable part of life. And anything I can do through my processes and through the people that trust me/trustable opinions that leads to faster resolution of things and not to indecision. I feel better at night, the other people here take satisfaction in, and we're just happy to offer." (John, Interview 1)

> "So, we don't want to spend too much time in indecision. It doesn't allow laugh[ter], and people usually don't laugh and play when they are in indecision. They are very serious, they are about to spend money, they are about to put something on their house that maybe is there for a long time, and they don't want to set something in their house that they will regret. So, indecision for me has always been a waste of time. I like to run, I like to play, I don't like indecision. I think that is very universal. That indecision causes doubt. And so, there is a thing now we are tracking called 'UHD-TV.' That I went to try there in Berlin at the IFA show in September, and many shows here in the United States and this ultra-high definition TVs, the company is just saying 'Oh they are brighter, they are more true colored, they reflect the nature better and everything,' and yet some consumers are starting to go: 'I don't know, you are not the same things, and everything I see is not reflecting it. I am not sure.' And that causes doubt, and then that doesn't cause just doubt for UHD-TVs, it causes doubt for a normal TV I might have bought. […] They don't like to be in a condition of doubt, they like to be in a condition of confidence. And of course, people will then, on the flip side, when they made a decision: 'Yes I like Samsung phones or I like Apple phones better.' They will tell, they will brag and defend. This is a psychology condition, where they want more company. So, they want the undecided friend, 'Why don't you buy a Samsung phone too? I just did it. You will justify my confidence buying, you are buying one' 'But why don't you buy an Apple phone like I just did, then I'll feel better.' People will brag about something they have committed to. It is much harder to get them to share the doubt. The reason I didn't buy a PC is this stupid Windows 8 that made me feel stupid. They won't go shout that out to their friends. Maybe this friend will not say: 'Oh, my friend is wise and has doubt,' maybe that friend will say 'ha, ha, ha he can't make up his mind, ha, ha.' And so, we are much more likely to share our delight in a purchase and influence other people and justify it. The more we have doubt and trepidation, […] because we have this self-fear: 'maybe I am really the only one. Maybe someone will make fun of me, because they know how to use Windows 8 and I don't. I better stay undecided and I better keep my mouth shut.' And yet the longer we have doubt about something without resolution, the more we can't enjoy life." (John, Interview 1)

Specifically, he (objectively) researches the concerns people have in very different areas, depending on where these concerns emerge. Sometimes, he also comments on a technology, but usually, he raises his voice in the context of specific consumer products.

> "That's increasingly, I find my world is not just the consumer electronics for which I am so quoted, but I'm based at technology and health care and wellness or genetically modified food. […] can't answer all those questions, but I try to learn as much as I can. […] In my position, where I get quoted on technology, I find myself more than once a month going into some area I don't have any formal education and that I find my skills to find to try and find more out. It's really hard to read biochemistry text when you're raised a physicist. […] […] I'm investing plastics in swimming pools the next month or so and there are a lot of people concerning about using plastic water bottles, swimming pools." (John, Interview 2)

> "I work very carefully to get a broad opinion before I open my mouth saying, 'This is like New Coke,' it doesn't matter how many copies of Windows 8 you put out there, it is not going to make people walk away from Windows XP and Windows 7, this is not me doing this, this is me reflecting what other people are doing. So, I am just a magnifying glass, if you will, of a trend that's already there. […] And sometimes they quoted me, they didn't know to say my name, sometimes they were just saying the Financial Times, but there are thousands of articles with a day or so. […] So fortunately, it was a sound argument that reflected with many, many people's opinions, and media can magnify this, and in the case of people we interviewed later, they felt great relief, they were saying: 'Oh, I thought I was the only one.' Because when you walk up to something and people say: 'Here, use this phone. It's simpler than your last phone.' And you have trouble with it, and you try again, and you still have trouble, and in today's world with big advertisement, people say: 'What's wrong with me?' And that's not a good feeling, and that's not why we were put on this planet, we are not supposed to doubt ourselves. And that's our inner truth that is shining through, and if we don't have somebody else to share our doubt. We have self-doubt, and that is negative because it doesn't help to be better students, better farmers or better machinists or better bakers, it makes the quality of life worse. So finally, when we have other people that share our opinion we go: 'Oh good, it wasn't just me. Now I will tell my friends, now with more confidence that I also had doubt that I felt so alone.' And a change occurs." (John, Interview 1)

His-criticism in the media has an influence on the companies more directly because the branded products he criticizes relate to a specific company.

> "That was my first clue, and that it took Microsoft eight months before there was that in outside logic, to say: 'Oh, oh, we got to go back and do this Windows 8.1 things.' It was a trigger in this case. If not the Richard Waters story, Microsoft might have gone for another 6 weeks, 6 months before finally changing things. So sometimes it takes a social threshold, a critical mass of another opinion to say: gee, maybe we were wrong." (John, Interview 1)

Example Case 4: Michael (Google Street View)—Aggregator, Consumerist Social Identity

For years, Michael has engaged in data privacy issues and fights against firms that violate citizens' privacy. His current job is a logical consequence of his interest in solving people's data privacy issues. Therefore, like John, he is guided by a general ethical principle (solve the data protection issues of people), but he also has no specific end-mission and focuses on the issues that arise from the consumer side. His-current job is a result of this interest.

> "The issue of civil rights was very important to me, general rights of liberty, and especially during the time of the campaigns against professional bans, this was very, very important to me. And so, I already had a certain affinity. Then I also had different interests, everything that had something to do with ecology, political peace movements, which then also influenced my political life a bit and everything that had to do with legal policy in the broadest sense. So those were my main points of interest. And then it was only a question for me whether I was going to take an environmental political, environmental legal or data protection issue. And after I joined the board of the German Data Protection Association shortly beforehand, it was actually clear to me that I wanted to do something with data protection in order to get my doctorate." (Michael, Video)

> "I have been working in data protection for 30 years, and this is just one more consequence, so to speak, that what I can do here in my role as data protection officer, of course I also take advantage of these opportunities. Maybe I want to say one more thing about the motivation: I am not opposed to technology, I am not opposed to the Internet, I am not opposed to the intelligent, high-tech use of the Internet, but I see that over the Internet and there is Street View the symbol for, it can intervene very much in the privacy—en masse and indiscriminately and without reason, it can intervene in the privacy of people, and my concern is to create a balance between the benefits and the risks that are now arising on the Internet and to contribute to this effort." (Michael, Interview 1)

> "And why he is now particularly involved in civil and fundamental rights, I don't know at all, but I believe that many in his family see tradition and fundamental rights, something like that as very valuable and that it always has was more important than maximized money." (Informant about Michael)

Hence, in his current job, he serves as an aggregator for consumer concerns in the area of data protection issues. He takes measures against the firms that violate these rights.

> "Citizens from suburbs of [city] turned to us and informed us that Google collects data and gathers pictures of their houses. And we investigated this accordingly and came to the conclusion that the fundamentals of legal regulations are not met here. We informed Google, and we articulated this in different ways—when you ask them—through media, to the petitioners that turned to us, through press and such, and we have found that the citizens are not informed about the purpose of the measure, that there is no guarantee that sensitive personal data will not be pixelated without clear identification of people, to vehicles or the like, and it did not open up a right of objection for further data processing, in particular the publication on the internet.
>
> We already knew Street View from our experiences in other countries, where it was established on the internet, and we also knew the problems that had arisen there. For example, that wives could then find out that their husband actually cheated on them with the woman they always suspected, because coincidentally, her husband's car had been parked in front of the suspected friend's house and broadcast on the Internet. That's only an example. There is a large number of examples where sensitive information, at least indirectly and assignable to an individual person, was then published on the Internet, and that led us to take the necessary measures. […]
>
> The negotiations have now resulted in that the points that I have just named, not all but many, actually have been conceded by Google, i.e., that the pixelation of faces and license plates takes place, that previous information is given to the public when a car is on the road, which was not followed, was not followed at all. In addition, we were able to enforce that if those people affected disagree with the representation of their house, that this then leads to a pixelation of the house, that it is recognizable in a rough outline, but it is not possible that, for example, criminals have access to the house or how the house is otherwise located, whether there is a Mercedes in front of it or a small car and so on and so on, which allows to draw conclusions about the residents and the owners. So, we were able to enforce this against Google." (Michael, Interview 1)

He also fights against other companies that violate consumers' rights. He takes legal measures and helps to enact laws, but he usually does not focus on the creation of or fight against laws.

> "Data protection officer Michael is pushing ahead with his fight against the Facebook 'Like' button. His-Independent State Center for Data Protection wants to request selected public and private providers in Schleswig-Holstein to hand in declarations and wants to initiate (legal) administrative procedures in October, Michael announced on FridayD." (Article about Michael)

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